# Metalsmith

Winter 86 Volume Six Number One $6

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Sam Kramer

The Journal of the Society of North American Goldsmiths

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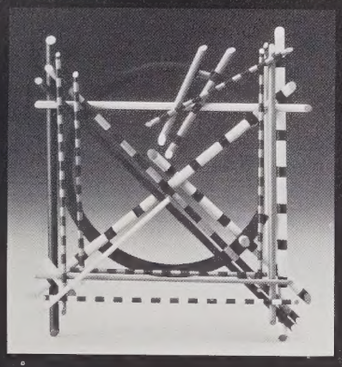

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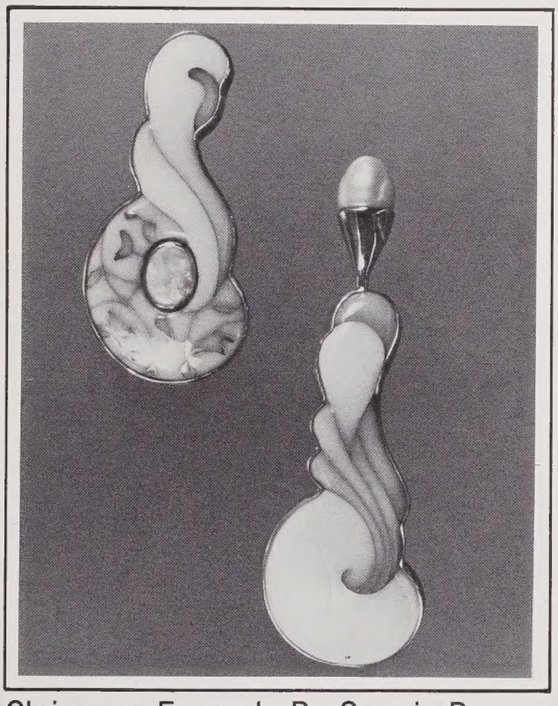

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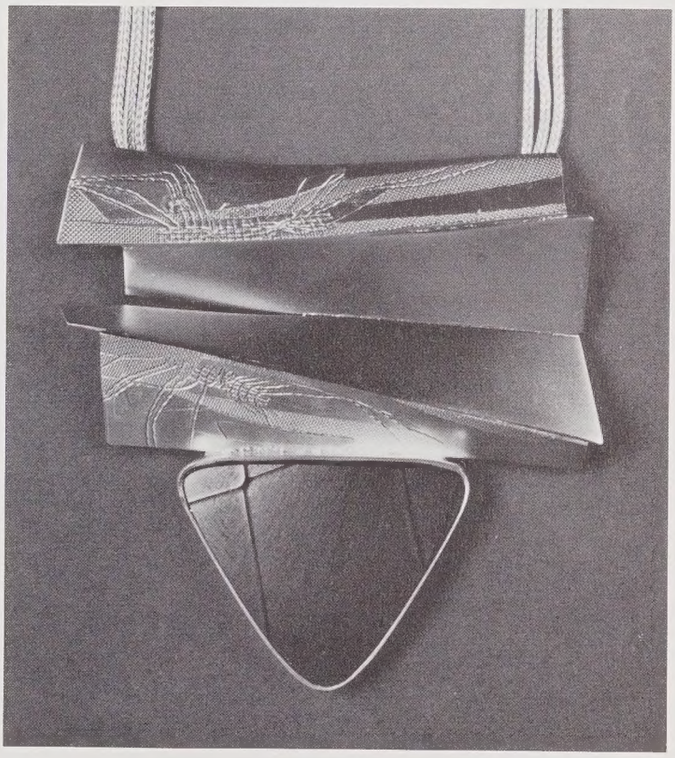

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Cover: Sam Kramer, *Roc* pendant, silver, gold, ivory, horn, taxidermy eye, coral, tourmaline and garnet, 6½" h. Collection: American Craft Museum. Photo: Keith Proctor. Story begins on page 10


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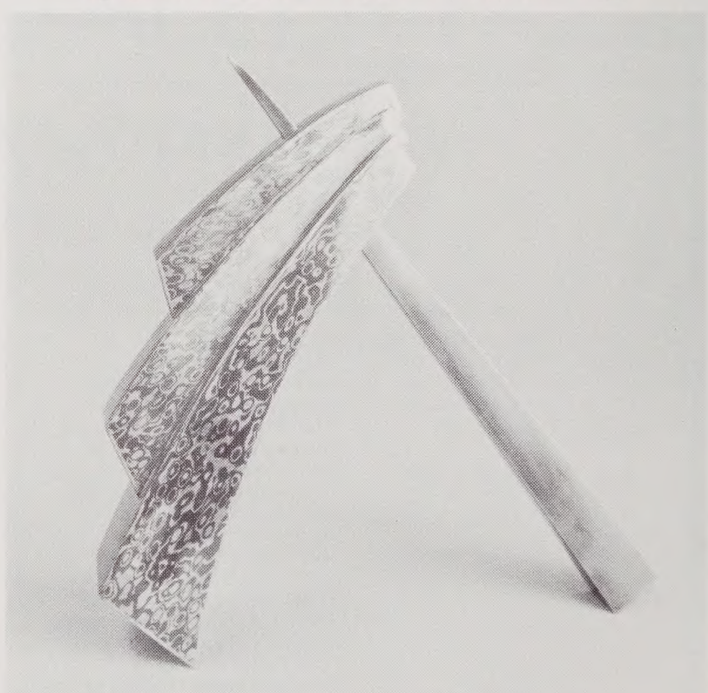

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# EDITORIAL

# LETTERS

**William A. Neumann 1924–1985**
William A. Neumann, artist, designer, craftsman, a founding member of the Society of North American Goldsmiths died unexpectedly October 2nd at his home in Clinton, Ohio. His contribution to the profession of metalsmithing and to the society is immeasurable. His acolytes far and wide continue his legacy of dedication to design and craftsmanship. Recipient of a B.F.A. from the Cleveland Institute of Art, he was presented the Gund award, taking him to Denmark and Sweden for further study. Head of his own design firm, he also taught industrial design, ceramics and sculpture. He was appointed to Bogota by the Aid for International Development as Design Director for Colombia, South America, where a fascination with Pre-Columbian gold granulation led him to pursue an M.F.A. in metalsmithing at Syracuse University. He joined the faculty of The University of Akron, designing and developing a new department. Pro member of SNAG since 1970, he served as chairman of the Selections Committee, as well as Secretary/Treasurer from 1978 to 1982.
—E.R. Michaels

Anyone active in SNAG from the early stages of its development already knows of Bill Neumann's deep involvement in the organization. Bill's reign began at a time of enormous growth, when SNAG consisted of 200 to 300 members, and ended when it was around 2000. During this crucial period not only did Bill serve as secretary treasurer but also the entire SNAG office was housed under his authority. Previously, mailing lists and office and business procedures had been disorganized or nonexistent—the SNAG office was in shambles.

Bill and his wife Marty, created a smooth-running, responsive, efficient office that allowed for the expansion during this stressful period. Many difficulties arose to test Bill's character, but his strong personality remained untarnished. He was a superb designer, craftsman and artist as well as a warm, caring individual whom we will miss sorely.

Bill Neumann and his work will be featured in a future issue of *Metalsmith.*
—M.B.

*Many letters received are of interest to the entire readership. Unless stated otherwise, all letters received may be included in the "Letters" section. Address letters to: Sarah Bodine, Editor,* Metalsmith, *1 Penn Lyle Road, Princeton Jct., NJ 08550. Letters should be signed and a return address given. The editors reserve the right to edit for publication.*

Dear Editor:
When major changes take place in an artist's work, these are sometimes difficult for people not in direct contact with the artist to understand, because of a lack of familiarity with the sequence of events and influences that brought about the change. This certainly has been the case with the change in my work. In an effort to elucidate this for anyone interested and to respond to Gary Griffin's comments about my work in his review (*Metalsmith,* Fall 1985), I would like to start by excerpting portions of the statement I wrote about the new series for the Yaw Gallery. Griffin either did not receive this statement or chose to ignore sections of it that I consider significant in understanding the evolution and direction of this work.

"When I arrived in England in November 1982 I had been doing jewelry exclusively for the last four years and very, very intensely during the summer and fall of 1982 in preparation for two exhibitions. . . . I had reached the end of a series and was very tired of the processes involved . . . When I started to work again during my artist-in-residency at the Sir John Cass School of Art, I began in a simple and direct way, cutting paper. . . . I wanted to work with three-dimensional forms free in space, not anything associated with the body. The vessel came to mind in part because this was something I had dealt with periodically in the past and also because I had been looking at a lot of British ceramics, both historical and contemporary. I think now that I was influenced by them because when I started to work, the paper forms were very contained and symmetrical, characteristics that are not normally part of my vocabulary. All the pieces were based on a circle and around 5" in size. . . . I completed three of the pieces in metal, intending to patinate them when I got back to the States. . . . I had been working with color in my jewelry and the patination was a way to extend this to bigger forms.

"I arrived back in San Diego in June with a month-old baby and the three pieces. . . . I took the summer to enjoy the baby with no intrusion of work. When I got back into the studio that fall, I found my mind had moved on, even though I hadn't been physically working, and the pieces I had done in England seemed so small and tight. I was ready for some big, energetic gesture, something that had not been a part of these pieces. . . . I tried to focus on that feeling and the images it conjured up. . . . I tried to analyze my change in attitude toward the Cass pieces and my desire now to do something much more powerful, and larger and expansive in gesture. My living space had changed. I knew I had been influenced by the smaller, more intimate, spaces of English houses and by the countryside in general, as compared to the expanse of the Southwest. The smallish size of the work I did in England seemed compatible with my living and working spaces at the time. Now I was back in an exotic desert environment, with vivid flashes of color in the midst of subtle neutrals, with bizarre growing forms and, of course, space. I couldn't ignore either the effect of having the baby, which was the most powerful physical and mental experience I had ever had. This fed strongly into my need to work bigger and more simply, to make things whose impact was forceful and strongly emotional, rather than intellectual, pieces with spirit and vitality and, to a certain degree, mystery, all things that I had felt with this child and that I feel in the environment as well. I made a conscious effort to approach the metal in the most direct way possible and to keep my mind free of the complex ways I had worked before. This way of working allowed me to keep the spontaneity and gestural quality in the pieces that I felt was an important part of their expressiveness. I kept my mind focused on the emotional impact I wanted in this body of work and on the mental journal of forms that have been evocative for me. In terms of color, black was important because of its qualities of mystery, strength and clarity. The variegated patination makes reference to the tonality and repetitive pattern of the desert as well as to its unpredictability. The scale of the pieces has evolved to make possible a statement which has visual power, and the surfaces a closer involvement and intimacy."

Letters continued on page 50

*Editor's note:* The image illustrated with the Shirk review was an editorial error. A representative image from the Yaw exhibit is shown above: Helen Shirk, *Vessel BU17B,* brass, copper, patinated, 16 x 14 x 10", 1984.

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# Emmy Van Leersum

*Dutch jewelry designer Emmy van Leersum, who died November 2, 1984, had been internationally recognized for over 20 years. Her work was most recently seen in New York at the "Jewelry International: Contemporary Trends" exhibition, organized in 1984 by the American Craft Museum and curated by Helen Williams Drutt. In the introduction to the catalog Helen Drutt writes: "Both Emmy van Leersum and Gijs Bakker, whose avant-garde departures are already history, have constantly moved forward with groundbreaking ideas. Their revolt against the formal standards of modern jewelry of the sixties elevated them into international focus. The line, which is seen everywhere in Europe, is magnificently articulated by Emmy van Leersum as it lies across the body, patterns itself against her clothing, or changes from one primary color to another, framing the head and shoulders in elegant gestures."*

**Living with Lines**

It is impossible for me to regard Emmy van Leersum as someone belonging to the past already, she was so fiercely present in her work. She expressed with all her being what she loved: clarity. In her thinking she could be very straight, heated even, when she thought that one acted injustly or when people would not make the effort to treat her work seriously. That such a straight course was also nourished by a great sensibility was perceptible in everything that surrounded her: the clothes she wore, the clarity of the house in which she lived with her husband Gijs Bakker and her son, Aldo, the intense interest she had for friends.

From the first moment at the end of the sixties, when I became acquainted with her work, Emmy van Leersum was clear: the enormous collars and bracelets, often combined with self-designed clothes, were the expression of her conviction that a piece of jewelry should not be an additive to indicate social status, but that it should be an expression of the personality of the wearer. She left behind all traditional elements that had previously defined ornament. Metal tube was used now because it was considered the most suitable shape to enclose an arm.

Tubes

In 1970, with Gijs Bakker, she designed a series of garments on the same principle: round-knitted tubes of an elastic material in which certain accents were introduced to emphasize parts of the body and to allow movement. These completely new ideas produced an emancipating effect. They also fitted in the general image of art at the time. A small group arose around Emmy and Gijs, which managed to realize a number of very important exhibitions in a short period. This new Dutch "style" found a response far beyond our borders, thanks to immediate reaction from Jean Leering, Riekje Swart, Wil Bertheux and Ralph Turner, among others. The question if it was applied art or not was now out of order. A mutual recognition between, for instance, Ad Dekkers and Peter Struycken and the group round Emmy and Gijs typifies this. In addition, the Werfkelder Voor Multipliceerbare Objecten in Utrecht came into being, guided by Emmy and Gijs, which offered the opportunity to present "cubical, wearable objects and objects with light" and also "experimental clothing, multiples and graphic art that spoke of a certain mentality." One searched for a way of thinking that "would create a relationship between dedication and personality of maker and public."

Synthetics

However, the industrial making of designs was still accompanied by too many setbacks and imperfections. After a period of small series production done by themselves in their own workshop, Gijs Bakker began to concentrate mainly on the design of furniture and lamps. Emmy proceeded with the development of jewelry and clothing. Here, too, it was to her a continuing surprise to see confirmed in mathematical laws her apparently intuitive interventions. This symbiosis of intuition and system was what made her work unique.

After experimenting with several methods, she started to work with synthetic material that could be bent out of a square plane. Also, for the first time, since the aluminum jewelry from 1966, she added color to a series of bracelets to act as an optical device. At the

end of the seventies there was a spatial breakthrough that took shape in two ways. One was the golden bracelets—perfect lines that followed the arm and in their turn were originated from apparently simple divisions of a plane. The second was the completion of two rubber sculptures, which were constructed the same way as the bracelets, but this time out of a cube. Imaginary existing lines were made visible by transferring them into seams. The results were soft rubber, stretched on tube-framed sculptures with straight and hollow planes. The execution of these "imaginations" demanded so much effort that after a single presentation at the Stedelijk Museum, Emmy decided to proceed in a new way. The conversion in lines that she was able to exercise in the golden bracelets and also in knitted jersey offered her a completely new scale of possibilities. Also, the search for more simple material went on in order to reach a larger public. The jewelry pieces from 1980 made of synthetic material are convincing proof. They are executed in primary colors as well as black and white.

Gradation

Sometime during this period the broken lines came about, based on the principle that the line (whether colored metal or gold) breaks from a straight to a diagonal course. At the point of transition the primary color changes into a gradation of the original color. The intensity of this color gradation varies with the angle. In the golden version, this is expressed in the material thickness. Emmy van Leersum's last work, designed in the summer of 1984, was destined for the exhibition organized by the Kapelhuis. This work was made up of lines facing each other at angles, sometimes detached with an invisible point of contact and made wearable with a connection underneath the cloth material. They came about as a series full of life and color.

It is therefore still unacceptable to me that these were her last visible lines, which have disappeared into space not measurable by man.

—Liesbeth Crommelin
Curator, Stedelijk Museum, Amsterdam

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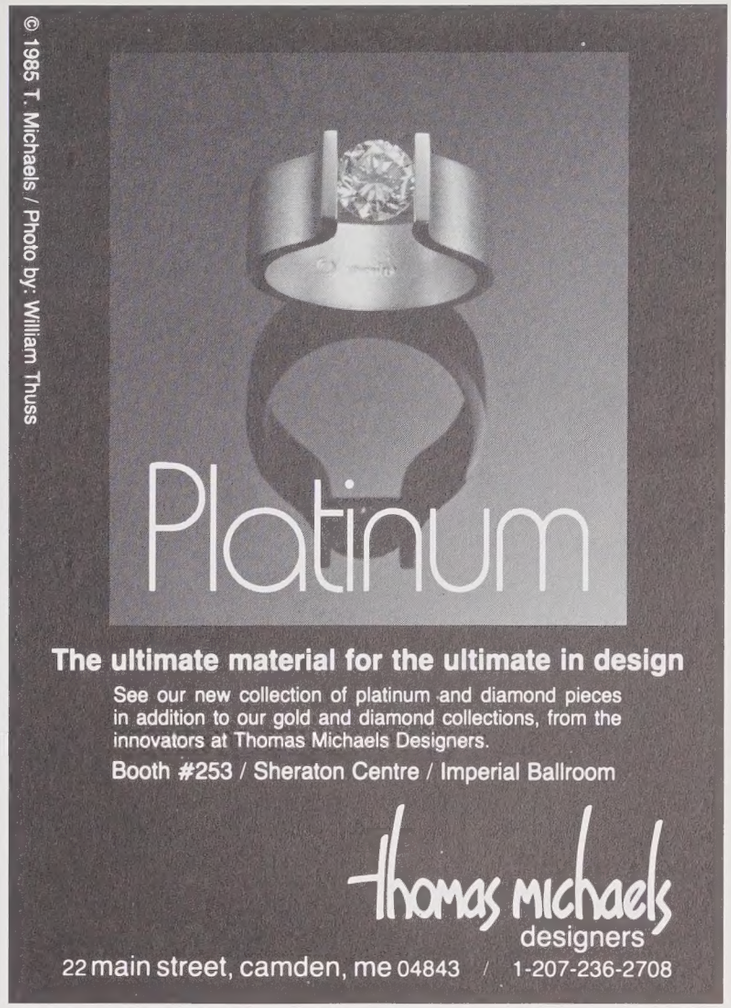
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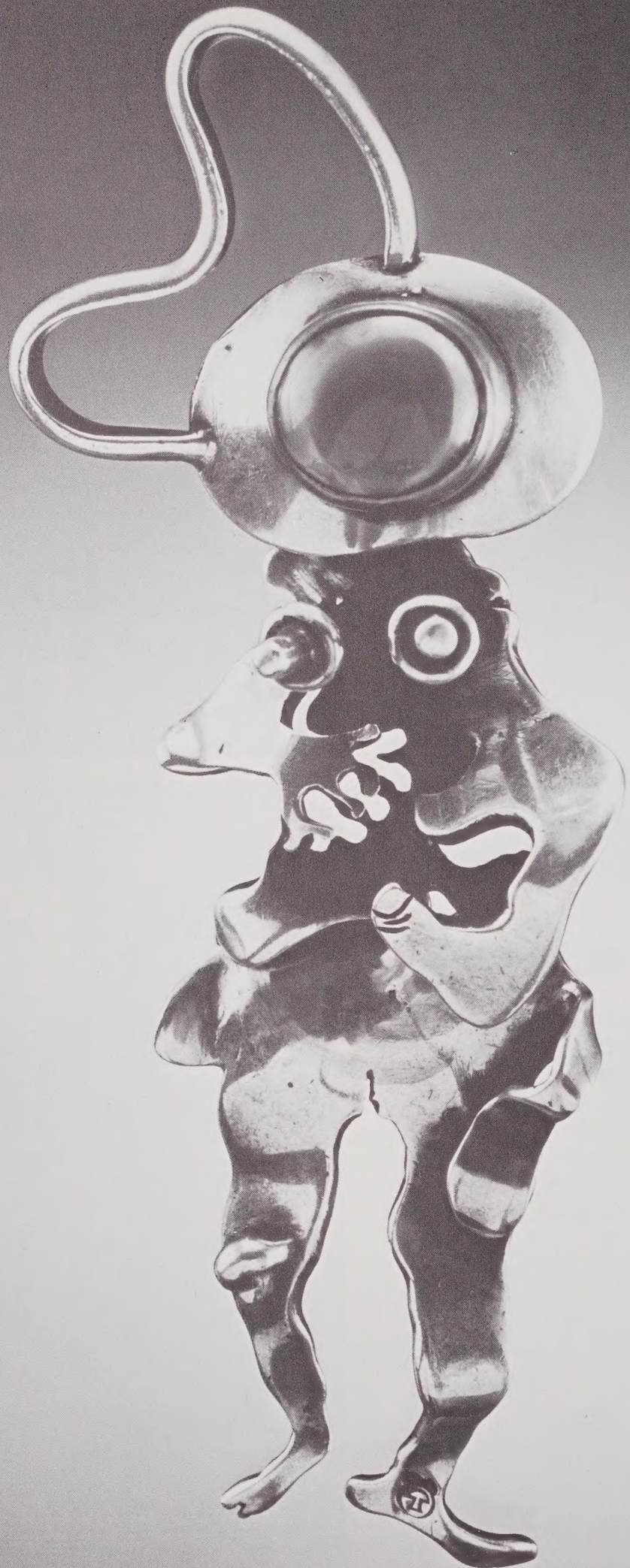


# Sam Kramer

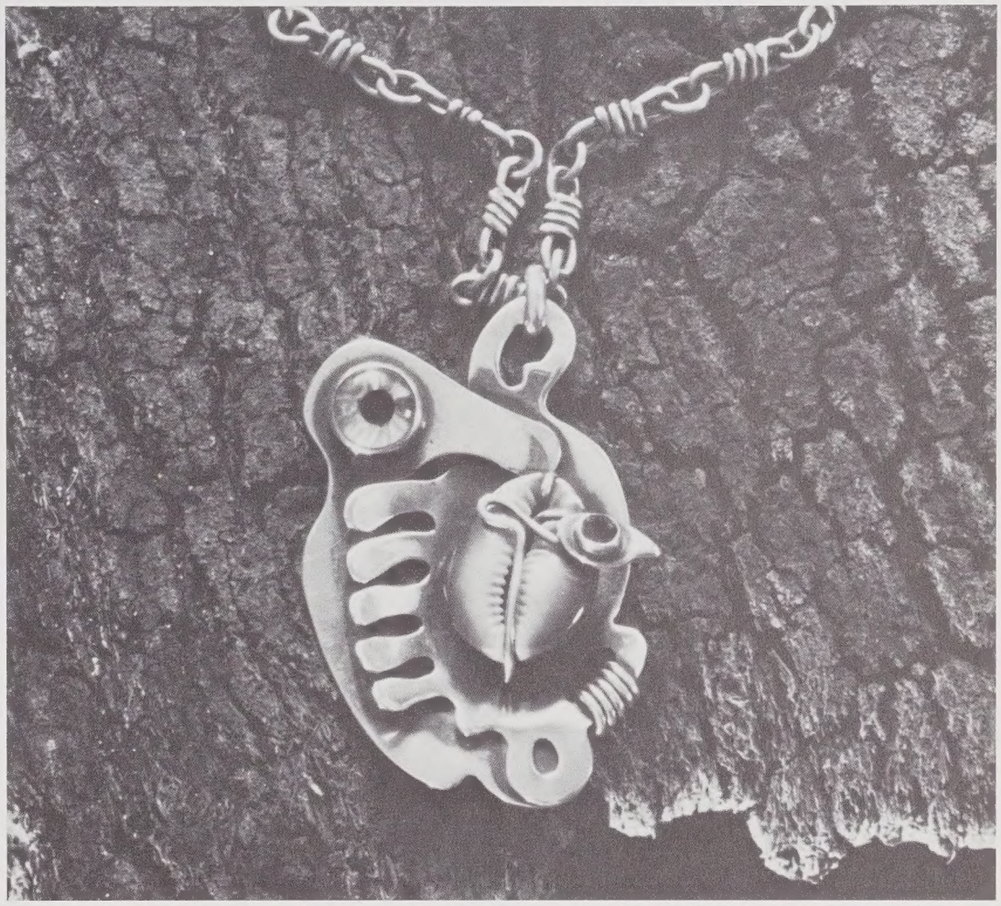
## Fantastic Jewelry for People Who Are Slightly Mad

*by Mark Foley*

S. J. Perelman coveted his leaflets. His "Fantastic Jewelry" appeared in scores of articles in periodicals from *Design Quarterly* to *Mechanix Illustrated,* from *Village Chatter* to *The Saturday Evening Post.* A dozen women in green masks paraded through the Village at his bidding. He knew Noguchi and Franz Kline, spent a weekend with the Calders, sold pieces to Vincent Price. At night, a huge cardboard protozoan wired with light bulbs pulsed in his window.

A man of contrasts, Sam Kramer could dash off a mind-bending broadside or an instructional essay with equal facility. He subordinated technique to idea. Yet, he experimented continually with novel welding and casting methods. The Studio of Sam Kramer became a Greenwich Village landmark—bohemianism incarnate. Nonetheless, his jewelry reflects critical junctures in 20th-century art.

When he died in 1964, the New York dailies devoted columns to his obituary. Ed Weiner, in *Craft Horizons,* remarked: "The jewelers like myself who began working after World War II walked in a well-cleared path in the wilderness of pioneering. Sam had been there." And Philip Morton, in his *Contemporary Jewelry: A Studio Handbook,* states flatly: "To the best of my knowledge, contemporary jewelry made its appearance no earlier than 1936, with Sam Kramer's work." He was the most notorious, arguably the most prolific, and perhaps the very best of his generation. Yet today, save for a new cognoscenti, he seems to be unknown.



**Opposite page:** *Jointed Figure,* silver, copper bezel with agate, 5¼ x 1½", 1948. Collection: 50/Fifty Gallery. Photo: Ralph Gabriner. **Above:** *Creature* pendant, silver, cowrie shell, spinel and taxidermy eye, ca. 6 x 4", 1944. Original Kramer studio photo by Pedro Guerrero

### Who is Sam Kramer?

*The New Yorker's* first issue of 1942 includes a small ad for the Homestead Spa. A beaming Negro balances a tea service on his head over the caption, "Famous for Southern Service." Boris Karloff is playing in *Arsenic and Old Lace* and a new thriller—*The Maltese Falcon*—has opened at the Trans-Lux. It is nine months before Peggy Guggenheim would present *First Papers of Surrealism* at her new gallery; four years before the term "abstract expressionism" would first be applied to painting.

Under the heading "Surrealistic Jeweller," *The New Yorker* took note of a 28-year old—one Sam Kramer. He was making jewelry from the oddest things, including molars and a bit of meteorite filched from a museum. Gas masks, embryos, spirochetes, squids and intestines were typical motifs. There was a ring "containing the cerebral bones of a perch"; another featured a glass eye. The young man's presentation was no more subdued than his pieces. The editors couldn't resist quoting his flyers advertising "Fantastic Jewelery for People Who Are Slightly Mad": "We have things to titillate the damnest ego—utter weirdities conceived in moments of semi-madness . . . Some things have a morbid feeling; tortured and massive they almost cry out with hysteria." *The New Yorker* discerned more Barnum than Baudelaire in these handbills, for the suggestion of shared derangement seemed to be a clever ploy.

Five years later, *Village Chatter* (the short-lived predecessor of today's *Village Voice)* marks Kramer's rapid passage from oddity to luminary. Already his penchant for psychodrama has been novelized in Charles Mengendahl's *Don't Wait Up For Spring:*

> *Then we rode downtown on a Fifth Avenue bus, and went into a shop where it said "Unbelievable Jewelry by Max Rinehurst" on the window, and I bought a ring from Max himself, who had a long black beard and flashing eyes. He said he was completely mad, and then he laughed. The ring was a massive silver thing with no particular design and no equal. Max said it was twisted and tortured and brought out the sadistic part in Barbara's soul.*

By now, his work is in museums; imitators are everywhere. Sam and his wife Carol have been joined by Peggy Ackerly and Charles Wendell in The Studio of Sam Kramer. An impressive roster of clients including Jose Ferrer, Jerome Robbins and S.J. Perelman have discovered the shop. And Sam, who needs no prompting, renders the Christmas rush in his inimitable—and purple—prose:

> *Who can forget Christmas at our studio? The hubbub? The bedlam? The jampack? The hurly-burly? The break-the bonesy? The lose-the-mindsy? The exaltation of it? A stranger in baggy tweeds, plucked-up and storm-tossed from hand to hand over the heads of the crowd to the front line, snatches at a pair of earrings, and is storm-tossed back, and out the door again. A young couple from New Jersey blunders in looking for a Chinese Restaurant, and is marooned for days in the crush, as it surges from one showcase to another. And us . . . sweating, and shivering, and smiling, but sticking to our posts . . . While the air turns blue with smoke*

*Unlike some Surrealists who would render the diciest concoctions in superbly well-made works, Kramer liked it rough.*

*Fused Cross* pendant with chain, silver with coral and cabochon emeralds and sapphires, 5½ x 7", 1958. Collection: Jon Kramer. **Opposite page**, Sam and Carol Kramer, *Lovers* pin, silver with turquoise and garnet, 3½ x 5", 1949. Collection: Karen Sebiri. Photos: Ralph Gabriner

> *and green with currency . . . pierced by shrill cries of maddened customers and made hideous by the steady groaning of the shelves, under their holiday burden of germs and worms and amoebas and foetuses and kidneys. Yes, and fragments of whittish coral, like decayed bone, clutched by silver . . . startled eyes with teardrops dropping . . . schizophrenic dancers, pendant . . . and nightmare creatures in brutal variety.*[1]

Embryos. Semi-madness. Blue air. Germs. Schizophrenic dancers. To our sensibility, so accustomed to the glossy presentation and impeccably "correct" sheen of the image-object, this is lurid stuff. Are these the rumblings of a new art form, or a facile bit of kitsch? The answer lies in that remote moment when "contemporary jewelry" was new—before the way had been smoothed by thousands of rolls of Ektachrome, sheathes of resumes, a hundred juries, before it had been captured, tamed and administrated.

## Journey through a Cultural Underworld

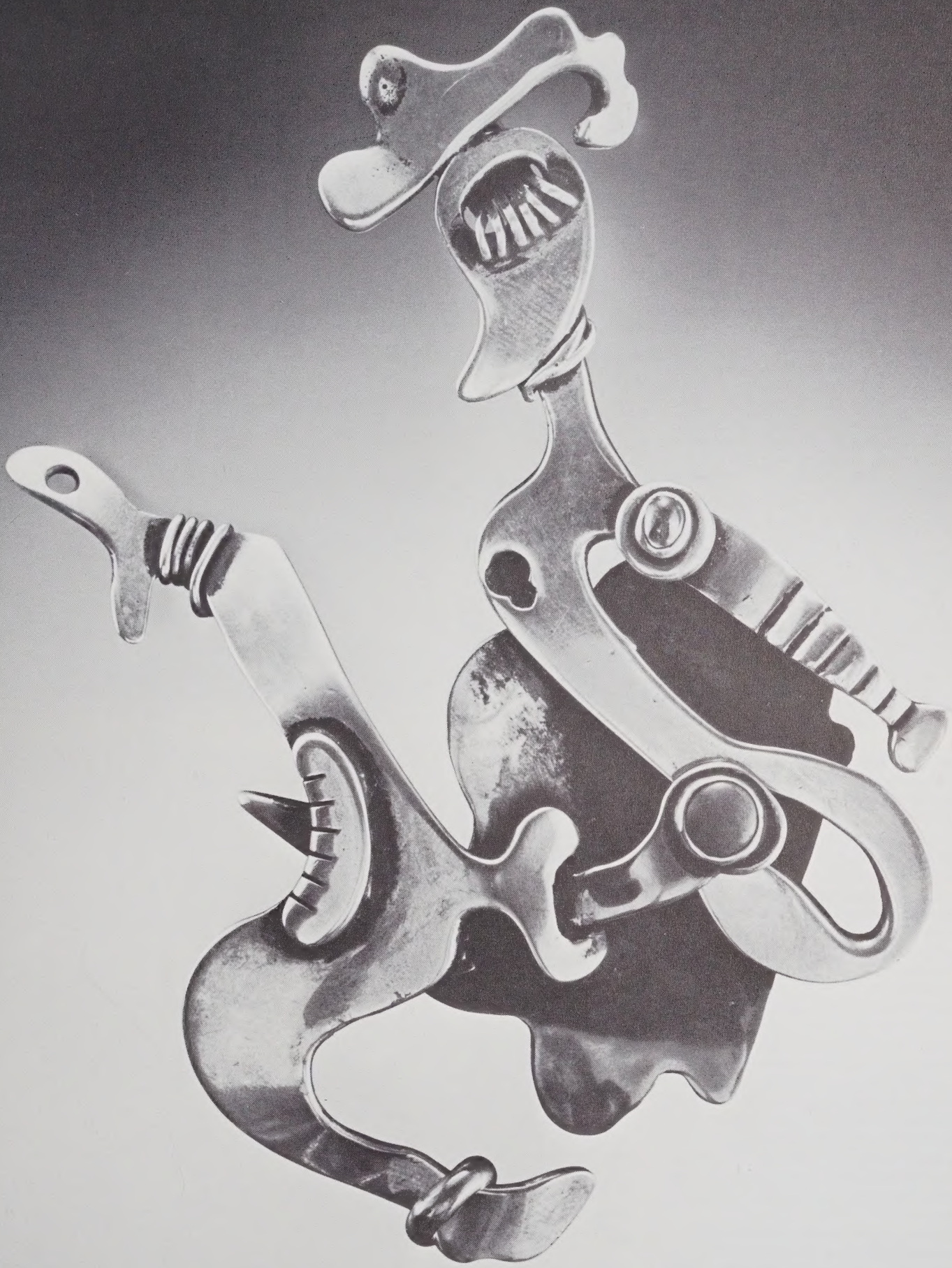
In 1947, under the title "The New Abstract Vision," the *Art News Annual* published a series of arresting images. Included were an oscillograph record of uranium fission, Edgerton's photograph of a splash's "coronet," and the x-ray of a pyrite crystal. Each advance in optics and photography increased the sheer visual plenum available to artists. It was as when the great travelogues had fueled the imagination, save this voyage occurred in the laboratory.

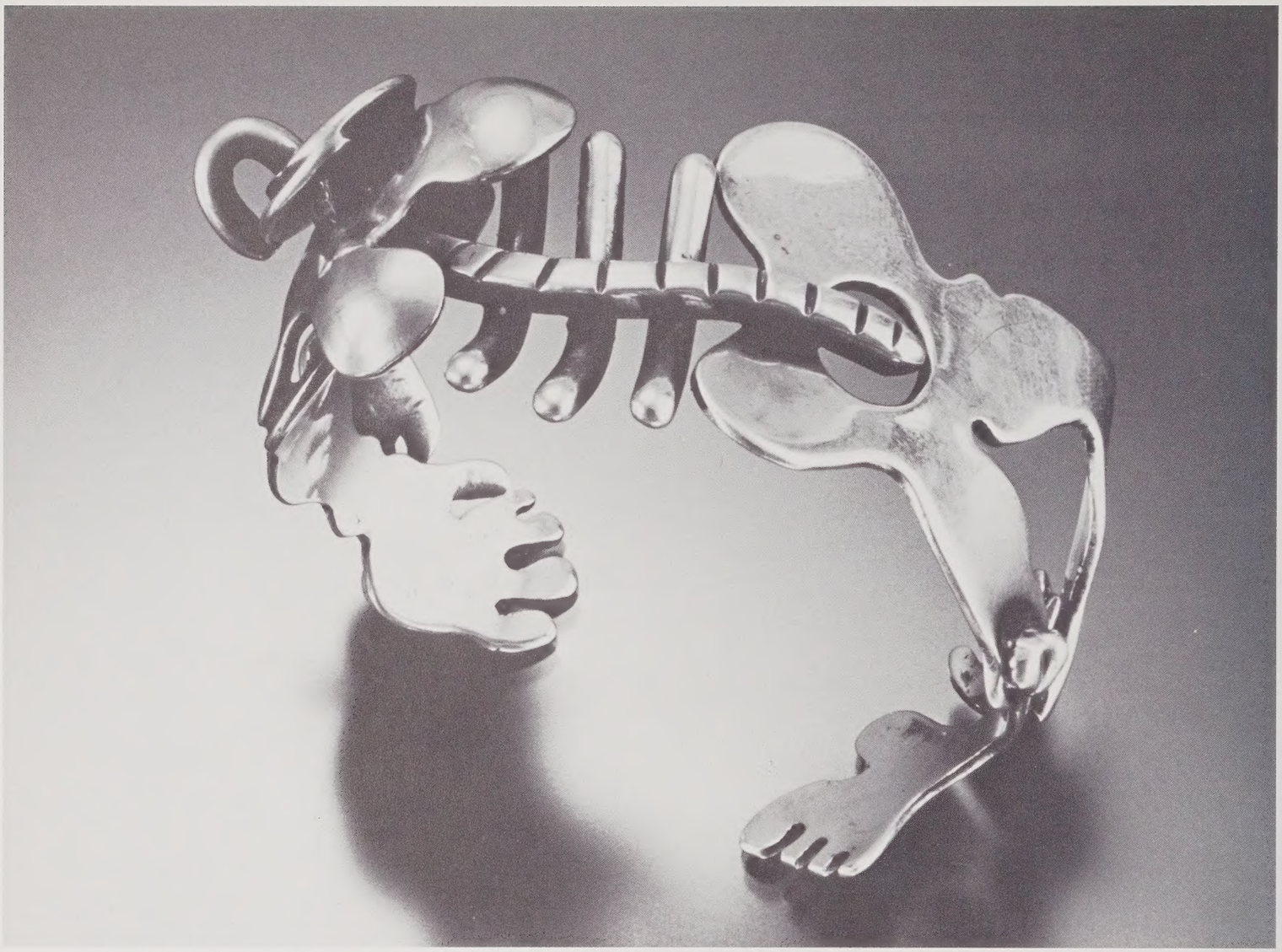
Awe was mingled, however, with dread. The same exquisite organization that could parse the secrets of the cell had incinerated cities and stacked corpses like cordwood. These images, too, were widely circulated. Perhaps, we had only a captive science—tethered to the irrational. Or perhaps our calculated cruelty was prefigured in the microbe's casual savagery. Hans Arp, in *Tiger's Eye,* comments on this situation and the advent of bizarre imagery:

> *Confusion, unrest, nonsense, insanity and frenzy dominate the world. Foetuses with geometric double heads, human bodies with yellow hippopotamus heads, fan shaped monsters with trunks like elephants, stomachs with teeth on crutches, corpulent or emaciated pyramids with dragging feet and fear in their eyes, clods of earth with sex organs, etc., have appeared in statuary and painting.*

The collage/montage principle—on a monstrous bender—was assembling new phyla with glue pot and scissors.

What had been vaporized at Hiroshima and cremated at Dachau were the assurances of Western civilization. Much art of the 40s and 50s can be situated in the turn from light to darkness, from the familiar to the strange. Paralleling a world of ominous creatures and ter-





Sam Kramer/Peggy Ackerly, *Skeletal Cuff,* silver, 1½ x 5½", 1948. Collection: Peggy Ackerly. Photo: Ralph Gabriner

ror, interest redoubled in aboriginal man and that personal lacuna—the unconscious.

Mark Rothko, in a radio program broadcast in 1943, remarked: "If we profess kinship to the art of primitive man, it is because the feelings they expressed have a particular pertinence today, in these times of violence."[2] The lure of the primitive can be discerned throughout the history of modern art. Now the stakes had been raised. No longer merely a steward of fresh esthetic effects, primitive man and modern man were linked by their mutual vulnerability.

Science and rational self-interest had not stemmed the conflagration. The unconscious beckoned. A coterie of Surrealists-in-exile exhibited at the Art of This Century Gallery in 1942. From the "fixing" of dream images to the use of automatic techniques, no art movement was more self-consciously grounded in the unconscious than Surrealism. But, the Europeans were not alone. It was not so unusual to hear an American artist champion the primacy of the unconscious in art, as did David Smith in 1940.

The jewelry of Sam Kramer describes a journey through this cultural underworld, a journey that would churn up creatures, complexes and the primordial in its wake. In interpreting his work, it is well to remember his stated purpose—a jewelry as expressive as sculpture or painting.

*Creature*

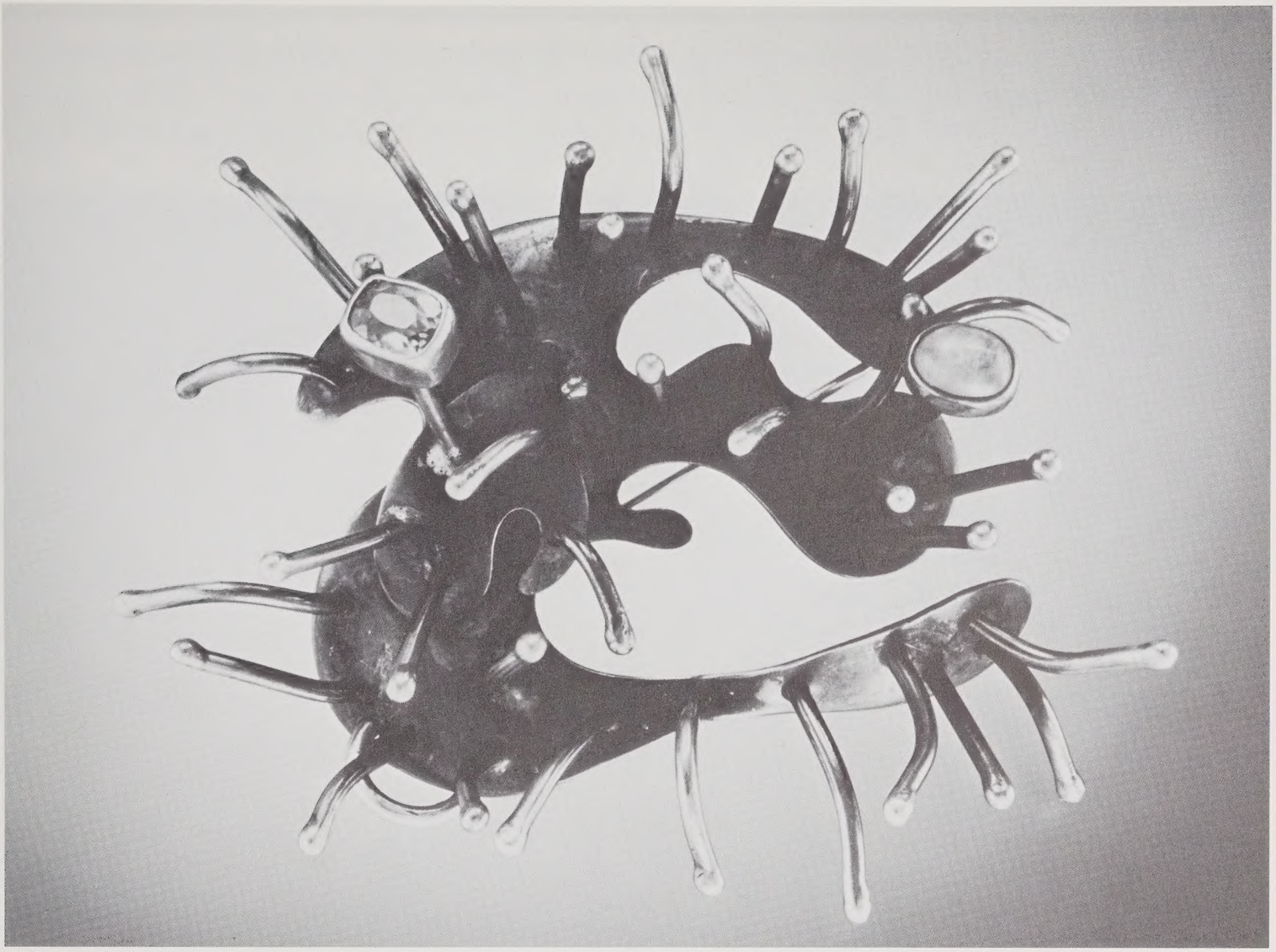
"Creature" was one of Sam's favorite terms, applied often to his pieces, sometimes to himself and his methods (i.e., "We make things out of a few creature-like tools."). The tendency in modern art to integrate motif, method and material in a self-reflective whole finds expression here: the primordial subject—amoral, instinctive—rendered roughly in metal. This is not a schematic of a microorganism. Rather, it uses a representational shorthand, like collage. Parts of the nervous, digestive and skeletal systems stand in for the whole. The "rib-like" loops are similar to the skeletal theme in 50s sculpture. The eye—a Kramer trademark—is seen throughout Surrealism. The materials are handled eclectically—glass eye, semiprecious stone and shell are deployed strictly for esthetic purposes. In formal terms, it shares its ovoid contours with the biomorph and stands as a sinister relative to Miro's whimsical fancies. It is of the period when Herman Mueller's glass models of microorganisms were exhibited at The Museum of National History, when those celluloid celebrities—the pod, the blob and the thing—appeared in popular culture.

*Lovers*

The Lovers pin illustrates Kramer's technique of "building" jewelry. Actually a full inch deep, it is comprised of three planes of metal riveted and hinged together. Interpretation paces anxiously around this piece: it both invites and spurns our attempt to delimit a meaning. Is it a battle of the sexes, a contest in which the instrumentality of exchange belongs to both, is held by both, and yet by neither? At first, the female (left) seems impaled—reduced to a mere appendage. On closer inspection, it is she who moves freely, the "penis" really cantilevers from her grasping loins. The male's pride is a trap. Or is it? Perhaps, the male element is on the left. The male's psyche is draining into his genitals: Freud's "genital organization" with a vengeance. It could just as easily be a polymorph. Or . . . This piece is like a Rorscach Test in metal—deliberately ambiguous, multivocal and provocative. Today, when it is customary to hear how jewelry "comments" on this or that, this piece says it all.

*Cross*

Cross epitomizes Kramer's "direct-metal" method. Scraps are laid out on an asbestos block. A rapidly moving torch directs the flow of molten metal. This is a dramatic and gestural technique—a medley of control, accident and improvisation. The stones are not set as value-laden jewels but strewn across the piece as accents. Is this the cross of an imminent god? It can be seen as an atomic emblem—a skein of monads, like an image from the electron microscope. Ibram Lassaw, the sculptor, was using a similar fusing technique to create



*Polyp* pin, silver with citrine and moonstone, 3½ x 2½", 1953. Private collection. Photo: Ralph Gabriner

his weblike structures. One can discern as well the "linear maze and labyrinth," "rhythmic homogeneity," and "pulsation" that William Seitz would use to describe some abstract expressionist painting, particularly Jackson Pollock's[3]. Or, like the frottage of the Surrealists, it is an indeterminate screen, a field for the play of the subconscious. As in the great ecclesiastical bronzes of the Quattrocento, one can see a tangle of figures, climbing, falling, struggling.

## The Search for Origins

Sam Kramer and his studio did not spring whole from a cleft in Greenwich Village. His style evolved from a variety of sources; his techniques from courses, work experience, trial and error. The search for origins will lead us to the Surrealism he avowed, as well as the artistic ferment that swirled around him in New York. It begins when a budding journalist, enrolled at USC during the Great Depression, decides to take a course in jewelry.

The course was taught by the chairman—and founder—of the ceramics department, Glen Lukens. In a well-publicized discovery, so reminiscent of the 20s appetite for tomb searches, ancient "secrets" and the like, Lukens had reconstructed Egyptian blue glaze. His articles appeared frequently in *Design* and *Ceramics Monthly*. A constant innovator, his name was linked to an array of "juicy" glazes, a versatile new clay body and an early electric kiln.

Yet Lukens was one part Edison, one part John Cage. The man who could wade through a library of abstracts on alkaline pastes was fascinated by chance effects and the uses of the unconscious. To him, the crackled, dripped or pooled glaze was an asset. Even the most mundane tasks could be vitalized by opening them to the psyche:

> *The student would start with this raw useless clay, then blend it with a little silica, a little talc. You see we worked empirically . . . we did it from an emotional level; the intellect guided us, but is was not the work of the intellect. It was the deep self coming up, penetrating the surface consciousness, just as surrealist people paint.*[4]

The accidental made normative? The prosaic imbued with process? This heady mix would have appealed to young Kramer, whom "a friend recalls as the most picturesque figure on the USC campus. He lived in a shack, wore dock hand's clothes, and spent hours poring over modernist paintings and avant-garde books."[5] It was as if his old high school favorites—machine shop and jewelry making—had met up with his new passions: literature, psychology and art. Just think of the jampack! The lose-the-mindsy!

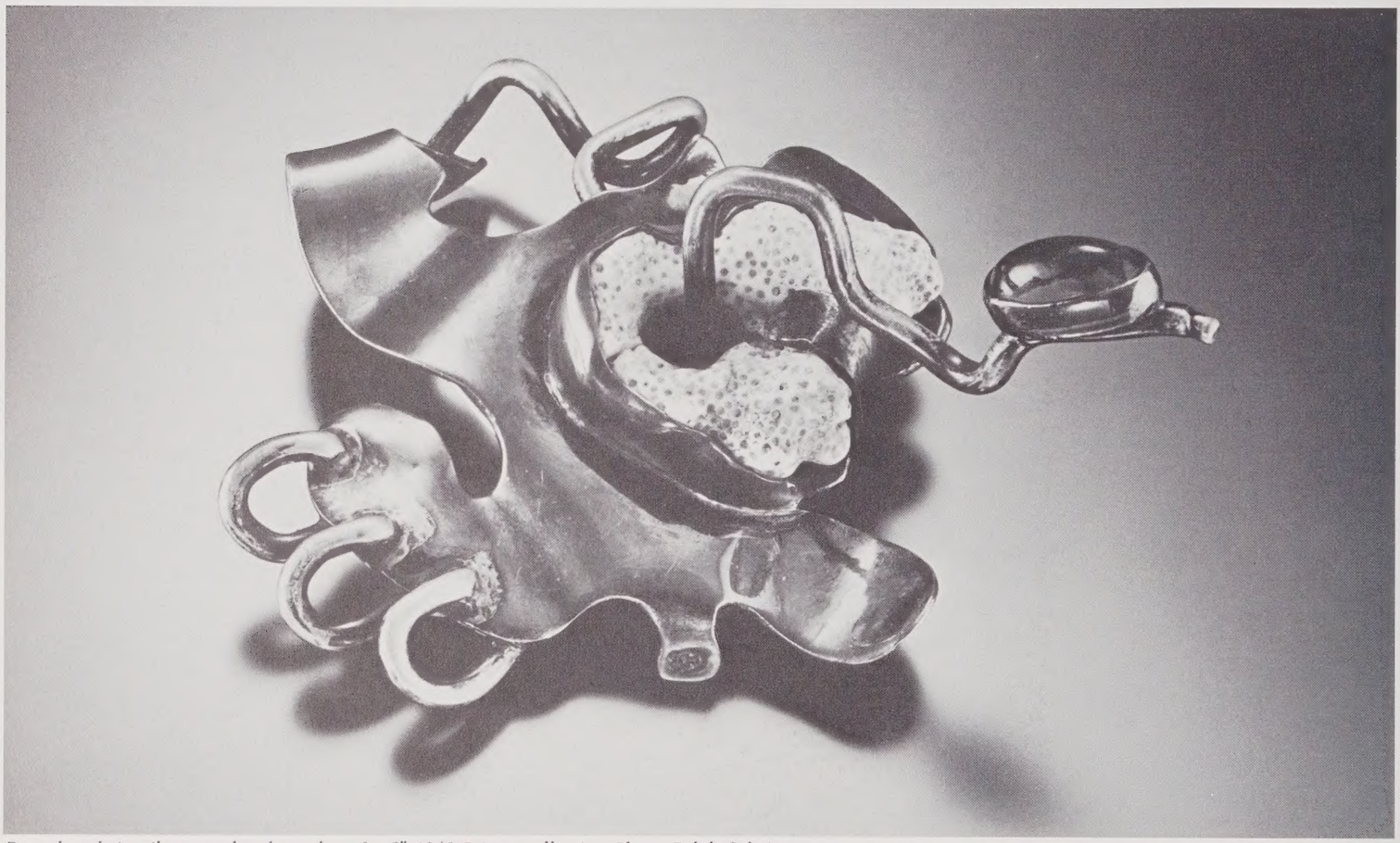
Kramer's subsequent interest in crafts would be global and lifelong, encompassing ancient, primitive and ethnic sources. A resume lists: "Careful study of Navajo and Indian Jewelry" in 1937; four trips to Mexico in the 40s for the "Study of Mexican Art, archaeology and jewelry"[6]; and a 1952 tour of "Italy and France, the study of historical examples of craft, jewelry and art."[7] In response to an ACC questionnaire, he stated:

> *"Almost yearly, I have travelled through Mexico, our own Southwest, Cuba, Spain, Italy and France . . . always studying the crafts of native peoples, the techniques, the traditions, the materials, etc, etc. These travels and studies have proved to have a very stimulating influence on my work."*

From the Navajos, he derived his use of heavy-gauge silver, the crude feeling of his bezels. One can see the primitive, as well, in his rough finish, the large scale and heft of his work, in the "wrapping" of stones with metal wire and in those staples of aboriginal adornment: shells, tusks and quills. Thus, the tableaux of the modern consciousness—the amorphous creature, the polymorphous psyche, the frieze of matter—are the first stratum in Kramer's underground. Beneath it lay a vast substructure—the primitizing tendency—which, like bedrock, would support the edifice of modern art.

A similar relationship among the primitive, art and jewelry was at work at the Museum of Modern Art. Pre-Columbian, African, Prehistoric, Mexican and American Indian material

*Unlike some Surrealists who would render the diciest concoctions in superbly well-made works, Kramer liked it rough.*



*Pterodactyl* pin, silver, coral and amethyst, 3 x 5", 1945. Private collection. Photo: Ralph Gabriner

was exhibited as art and as a source for modern art during the 30s and 40s. In 1946, MoMA published a book entitled *How To Make Modern Jewelry,* extensively illustrated with primitive and ethnic examples.

There is another bond between the primitive and the modern: the imagination of a shared intention. Sam thought his work, at its most uncivilized, could be "disquieting," like a fetish. Hadn't Tzara, the Dadaist, advocated an art like a "cerebral revolver's shot?" Wasn't the Dada-Surrealist objective to puncture the flow of normality? Could these be the amulets of an alienated age?

In 1942, *The New Yorker* dubbed Kramer the "Surrealistic Jeweller." Twenty-two years later, Ed Weiner eulogized his "savage surrealism." Clearly, the avid literateur of USC had taken his Dada-Surrealism straight up. Animated objects, skewed imagery and the occasional cadavre exquis quicken his prose. He organized gestes worthy of the Dada, deploying the Space Girls—clad in green tights and luminous green makeup—to pass out his handbills. In winter, The Studio's doorknob—a large brass hand—wore a pigskin glove. This was no mere pose. In Kramer's jewelry, one can see devices and techniques so characteristic of Surrealism. Its project of systematizing accident and its allegiance to the unconscious are paired in Kramer's "spontaneous" fusing technique. At the margins of control, mastery withdraws, surveying the barrage of associations thrown up by hot metal. There are biomorphic pieces that resemble Tanguy. Others use found objects. And throughout, Kramer's appetite for provocation is at play as so neatly summed by this Jurassic jewel:

> *A timid lady once ventured into Sam's shop, glimpsed a brooch, uttered a little cry and fled. This brooch resembled a pterodactyl cradling its young in one bony wing, and moved a second lady to exclaim that she had never seen anything so repulsive. "She was really disturbed," Sam recalls with satisfaction, "Wow!"*[8]

Kramer was not contained by Surrealism. Carol Kramer mentions Picasso. Certainly, his metaphorical displacement of body parts can be seen in their figures. When Sam speaks generally, it is of "modern abstract art." The midpoint of his career witnessed the demise of Surrealism per se, as it was "assimilated to the cumulative vocabulary of art."[9] The new language, peppered with terms like "action" and "drip," was spoken within hailing distance of his shop.

Earlier, we outlined some interests of artists working in the 40s. The revelations of the microscope slide and the death camp, the attraction to the primordial and the unconscious have been associated with the early New York School. Yet, abstract expressionists actually retained much from the Surrealist advance they had first embraced, then spurned. Having tasted the gamey allure of process, they turned to renew earlier forms of abstraction. On occasion, Kramer seems to have his ear cocked in the direction of the Cedar Tavern and the 35 East 8th Street Studios. He speaks of the "subtle tension" in an object made improvisationally, or how small details or accidents can serve as "jumping off points." Here, he discusses the use of stones in a decidedly painterly manner.

> *"They may be used for a certain optical effect to set up tensions or relationships with other forms, to contrast with a darkened area, to create an awareness of space. They may be used with other stones to react against each other, to provide a pause or termination."*[10]

Unlike some Surrealists who would render the diciest concoctions in superbly well-made works, Kramer liked it rough. In this regard, he is akin to those abstract expressionists who eyed technical prowess per se with suspicion. As Hans Hoffman stated: "Technique is always the consequence of the dominating concept; with the change of concept, technique will change."[11] The notion of perfectly realizing a predetermined "design" is alien to Kramer, as it was to his mentor Glen Lukens. Rather, he would liken his jewelry to "ancient handicraft," worn and eroded.

The Studio's work had surprising affinities

*The modern jewelers of the 40s and 50s were a colorful lot—artists, hobbyists, war veterans entrepreneurs. How "slum-like" Kramer's landmark would appear today with its dusty display cases, machinery, ragtag furniture all jumbled in the same dim room.*

with sculpture of the 50s. Both had their share of apocalyptical birds, such as Kramer's pterodactyl brooch. Sculpture's tendency to "negative space" can be compared to Kramer's skeletal pieces, his habit of segregating individual parts on different planes, projecting stones on elongated stems or capturing space in wire. On occasion, he used the word "architectural" to describe this spatial extension.

### The Legacy of Kramer's "Slum"

It is customary to assume we live at the apex—the most sophisticated moment in cultural history. In this view, tradition is a success story, a chronicle of ever more exquisite innovations, ever more refined reception. This masks the tradition's underside: its violence against itself. For tradition both imposes a consciousness and enforces an unconsciousness; it elevates some and drives others into obscurity. The "enforcers" of Modern Jewelry can be identified as the economy of claims and the federal form.

Art-status is the claim most frequently deployed by the modern jeweler, followed closely by claims to material variety and social commentary. Today, a torrent of claims heralds even the slightest esthetic effect. These are voiced with the proper degree of breathlessness, as if we were hearing Invention in his workshop. (Alas, it is merely the economy of claims noisily recirculating old coin.) The comment of Aymer Vallance on art and jewelry is singularly timely:

> *At any rate, it is certain that, thirty years since, it was quite impossible to procure jewellery in the design and composition of which there entered any artistic taste whatever. Such simply did not exist. Whereas now there is a widespread, though unhappily not a universal, movement amongst us for the design and production of jewellery on true aesthetic principles.*[12]

This remark—on art nouveau jewelry—was published in England at the turn of the century. Material variety? Every other review contains a laundry list of ingenious materials. Can they rival the startling variety of Kramer's workshop, or the MoMA show of 1946 which displayed a collar of safety pins and a necklace of nuts, bolts and a sieve? Is there any commentary more urgent than Peggy Ackerly's skeletal cuff, so reminiscent of Margaret Bourke-White's photographs of the Erla death camp?

Tradition's progress is not situated in objects and artistry, but in the consolidation of its administration. In 1942, an article on wartime housing appeared in *The Museum of Modern Art Bulletin.* It contrasted privation with the benefits of federal aid: on the left, dusty backyards, slums, urchins playing in the street; on the right, and new Federal Oz, immaculate schools and housing courtesy of USHA and the Farm Security Administration. The tangle of children is now a neat circle, playing an organized game.

Sam Kramer. Photo: Pedro Guerrero

The modern jewelers of the 40s and 50s were a colorful lot—artists, hobbyists, war veterans entrepreneurs. How "slum-like" Kramer's landmark would appear today with its dusty display cases, machinery, ragtag furniture all jumbled in the same dim room. What a contrast to the achingly proper galleries of "art to wear" with their meticulous installations. The process of federalization—real and metaphorical—has created a new Oz of slides and coated stock and color plates. Everyone in a circle, now.

> In 1960, in *Design Quarterly,* Sam Kramer commented on jewelry making: *. . . that slum in the neighborhood of art; that orphan from the family of "true" arts . . . Smugly insists on being portable decor for body and dress and, at best, is accepted as good design, which is no more than saying it expresses our industrial environment rather than the compelling needs, dreams and skills of an artist.*

Today, when it takes about as much commitment to buy "art to wear" as it does to purchase a set of Mies van der Rohe chairs, most modern jewelry stands as a souvenir from the world of clean, "good taste," the world of the matte black coffee table and the Braun calculator. This is the real slum, the air-conditioned nightmare.

Notes

1. *Village Chatter* (May, 1947), p.27.
2. "Art in New York," Broadcast, WNYC Radio; interview with Mark Rothko, Adolph Gottlieb.
3. Seitz, William C., *Abstract Expressionist Painting in America* (Cambridge, MA: Harvard University Press, 1983), p.60.
4. Interview with Glen Lukens by Hazel Bray, 1966, p.6. (Scant information exists on Lukens' jewelry course at USC. Throughout his career, he espoused the primacy of spontaneity and process in ceramic making. The author infers that similar notions were expressed in his jewelry course.)
5. Gehman, Richard, "The Doodads Women Wear," *The Saturday Evening Post* (June 18, 1955), p. 114.
6. Carol and Sam went to Tasco and met William Spratling. They felt Tasco silver was somewhat commercial and decorative. Their 8th St. shop, however, did resemble a traditional Mexican joiera: display in front followed by workspace and living quarters.
7. Kramer's resume reprinted from *Junior Arts and Activities,* 1954.
8. Gehman, "Doodads Women Wear," p.113.
9. Rubin, William S., *Dada, Surrealism, and Their Heritage* (New York: Museum of Modern Art, 1967), p.182.
10. Kramer, Sam, "Gems in New Contexts," *Craft Horizons,* vol. 12, no. 5, (September–October, 1952), p.34.
11. Seitz, *Abstract Expressionist Painting,* p.143.
12. Vallance, Aymer, "Modern British Jewellery and Forms" *Modern Design in Jewellery and Fans,* ed. Charles Holme (London: The Studio), 1901.

*Mark Foley is a freelance writer and jewelry collector.*

Illustration by Seymour Chwast

# GETTING REPPED

*by Vanessa S. Lynn*

In 1965, Kristin Moore began making jewelry in sterling silver and gold wire as a full-time occupation. Hating selling, she sought a rep at the outset. Her first year brought gross sales of $6,000. Today, 10 years and a half-dozen reps later, she makes jewelry in predominantly gold and semiprecious stones. Her enormous success allows her to maintain a large studio with a trained staff of five, several reps, a business consultant and her own regular newsletter for her employees. Her jewelry has been sold by virtually every major store in the country and, this past Spring, her work was the subject of the first retrospective ever held at New York City's Artwear Gallery. Kristin credits a good part of her success to the efforts of her superrep, Liz Bader.

This story illustrates why getting repped is a topic on nearly every jeweler's mind—or, at least, the mind of everyone who has ever contemplated a production line to support the hours spent in the usually less lucrative, but generally more rewarding, endeavor of one-of-a-kind creation. But everyone who dreams has hesitations, and many who have tried have reservations.

What follows has been culled from hours of interviews with jewelers and representatives who deal in a spectrum of price points and a variety of markets throughout the country. What emerged was that none of the variables made much difference. The jeweler/rep relationship can succeed or fail anywhere, in any market. Certainly its success depends upon the attitudes, expectations and skills of both parties. Here, then, are guidelines for the intricacies, subtleties and intimacies of the jeweler/representative partnership.

### What is a Representative?

A representative is someone who shows a sample line of your product to prospective buyers and writes sales orders for it, in exchange for an agreed-upon percentage commission. A rep will sell to specialty stores, department stores, boutiques, gift shops, museum shops and mail order catalog producers, or also at any of the seemingly endless string of trade shows that take place seasonally around the country. The major shows include Jewelers of America (JA), Fashion Accessories Expo (FAE), Pret-a-Porter (PRET) and the Gift and Boutique Shows. In the course of a year, a rep can service over 1,000 accounts, for the benefit of as many as 50 artists, whom they handle.

There are thousands of reps working for jewelers, and dozens of ways they may structure their business. This can vary from an in-house rep, who carries one line exclusively, to an independent rep, who has a showroom in the wholesale jewelry district of a major metropolitan area and employs a group of sub-reps to take the product(s) on the road in a specified territory. In between are reps who only have showrooms, reps who only go on the road within a small geographic area, reps who have two or three lines, reps who have 50 lines, reps who do only jewelry, reps who do accessories and reps who do gifts and jewelry.

The business setup is no criteria by which to choose a rep. In fact, there can be nothing to prevent an artist from having several reps, working in several different ways in distinct geographic areas. The important thing is to target a rep (or reps) who has a market for your type of work.

### What is the Representative's Product?

Here it is important to reiterate that this article draws upon the experiences of people who produce and people who sell a production product. Many of the artists included make one-of-a-kind pieces as well and went into production to support the other "habit." Some continue to do both; some have found production so fascinating and/or rewarding that they have, at least for the present, abandoned unique designs. But from artists and reps alike, I heard overwhelmingly that selling unique pieces through a rep is not lucrative for either party. Occasionally, a rep will have one-of-a-kind work by an artist whose production line they carry in the showroom, but this is done more as a sign of support and promotion than it is for sales potential.

One company in New York, whose associates were interviewed for this article, was established specifically to represent artist/designers of unique work. The following quote is from their flyer: "Through fashion shows, slide lectures and sales exhibitions, the company presents contemporary jewelry within a historical framework to foster appreciation of the vitality of current expressions in personal adornment. Presentations can be arranged through a sponsoring organization and are given in galleries, boutiques, stores and museums." To my knowledge, this is a unique undertaking; but clearly, at this time, it functions more as a promotional than a sales firm.

To return to the specifics of the product, it is important to know that reps are most interested in a "line". A rep wants to see a body of work that reflects a cohesive esthetic statement, can be identified as one individual's work and can be presented as such to the buyer. A rep is interested in seeing that an artist has explored an original design idea in depth by taking an initial concept and working its elements through variations in format. A line can be made up of one type of item, a necklace line, for example. But if that is the case, then, as rep Laura Kruger notes, "You will want to include at least a choker, a double strand, a triple strand, a long necklace and a statement piece or 'show stopper.'" The minimum number of pieces worthy of presentation in this situation would be 12.

If you are creating a full jewelry line, it should at the very least, include related earring, necklace and bracelet styles. Ideally, it should include pins and rings, and more recently, reps would like to see menswear as well—cufflinks, stud sets and tie pins or bars. In this case, a line can consist of related styles in "groupings"—a bracelet, necklace, pin and earring that clearly "go" together. A line of this nature should consist of 30 to 50 pieces. If you present an incomplete line to a rep, you may be asked to expand it into something truly marketable. But more often than not, the rep will interpret your meager showing as a sign of unprofessionalism and be hesitant to work with you.

Once you have produced a line you must price it properly. Cheaper lines can wholesale anywhere from $15 to $35, while the more expensive may run from $35 to $125. Kate Hines of Boston capitalizes on this situation by producing a lower and a higher end line, each uniquely designed. This permits the possibility of finding two reps in a single geographic area, seeking twice as many suitable outlets for her work.

The above ranges do not necessarily represent any "standard" wholesale price limitation. In fact, prices run the gamut, from $15 to several thousand dollars for gold and precious gems. But materials do not tell the whole story. In fact, they can be quite deceptive. While the general buying public remains resistant to exorbitant price tags attached to nonprecious materials, inroads have been made here over the last seven years. This is a result of the slow but steady education of the buying public to the phenomenon of "designer jewelry" and "brand names" in the field. A vermeil necklace by Ted Meuhling can cost $1,000. Earrings in painted acrylic by Sachiko Uozumi can approach $200. These are examples to aspire to, but not to realistically price your work against until you make a name for yourself. Until that time, prices must reflect the usual cost of materials, cost of production and general shop overhead, which includes packing and shipping.

All the reps I spoke with said they were willing to help artists price their work fairly. Since they are so familiar with the market, they are your best guides. They do want to hear, however, that you have at least given serious thought to your own specific market and pricing needs.

The final point worth making here is that

there is a clear market distinction between *fine* and *fashion* jewelry. *Fine* is fabricated of precious materials, including precious and semiprecious stones. Much more related to general style trends, *fashion* can be made of almost anything, from metal to rubber, papier maché, porcelain or faux stones, and can be priced as high as $1,000.00, if, as previously mentioned, the artist is well known. Price point does not determine whether your jewelry is "fine" or "fashion," material and "trendiness" do. And in looking for a rep, you must find one who sells to either a *fine* or *fashion* clientele. Because of the evolved buying structure and marketing distinctions made by large stores, these rarely overlap. Because it has been somewhat easier for artists designing in precious materials to ease into the existing fine jewelry marketing structure, 80% of the reps interviewed for this article have been chosen because they handle fashion jewelry. This is the newer and more volatile market, where higher prices cannot be justified by "investment potential" or "heirloom quality."

The artist creating unusual fine jewelry for production can access a slowly evolving establishment of reputable jewelry representatives through other jewelers. Such a rep needs to have vision, as well as enough conviction in the product to persuade the generally conservative fine jewelry store owner/buyer of the viability of a distinctive new product line. But this is gradually being accomplished. It is the newer fashion jeweler, whose work is subject to the whim of a market constantly redefining

## Why Seek a Rep?

For some artists, this question has a very simple answer: they don't want to sell for themselves. Artists have sought reps at both the outset of their production career and at a more advanced phase. Some note that for the beginner a good rep can be a guide through the initial business maze (even though reps prefer not to take this on as part of the bargain). But, if they are seriously interested in you despite your inexperience, they will take the time to teach you about pricing, payment schedules, invoicing and the marketplace in general. Mary Caven Miller, with experience in marketing, product development and mail order catalogs, now reps artists in several media, including metal. She comments, "Once I believe in an artist, I will give him/her all the advantage of my expertise, from product development to business management. If they show me a few small pieces of jewelry, and I think it is salable, I will show them how these can be expanded into a real line. I will even work with them in their own booths at trade shows. But remember, these are artists I truly believe in."

Yonghi, a highly successful rep who works the Midwest and has a showroom in Chicago, recognizes that most of the artists she starts with are new to the field. "If I believe in them, I inevitably take on the total package of responsibilities. I mother them, teach them the ropes, from how to read an invoice to how to put their work on display boards so that a rep can take them on the road."

A rep can provide exposure for a novice and offer knowledgeable feedback on the work. They are on top of, and immersed in, market trends. Additionally, buyers are more apt to share honest opinions with an intermediary than with the artist.

Established businesses generally seek reps to help expand sales. Either they felt they no longer had the time to do it themselves, or they could not personally reach the desired wider markets.

A word here is in order about self-repping. Many artists do it, but to be effective, they give it constant and immediate attention. The best thing about self-repping, and thus going to the trade shows yourself, is that it is an excellent way to learn the trends in fashion jewelry, to get direct feedback and to make contacts. In fact, many artists who have reps have now negotiated arrangements that still allow them to do their own sales at trade shows. Some artists, even though they may have several reps, still feel that they are their own best salesperson. Thus they relish the occasional trade-show opportunity. However, you do need a certain kind of personality to successfuly self-promote, one that is basically outgoing, congenial and aggressive. No less important is a high degree of self-confidence. Selling involves rejection, and you have to be able to tolerate that to succeed. For every buyer who places an order, there may have been 50 to 75 people who passed you by. That may have been because your work was too cheap, or too expensive, and not necessarily because it wasn't liked. But, in fact, the reasons for not writing an order are not relevant in this context. Frequent rejection is. If you are prone to taking such rejection personally, self-repping is definitely not for you.

It is also wise to be aware of the particularly high level of frustration in jewelry sales representation—a problem noted by artists and reps alike. The turnover rate among store buyers is high, since they are generally young and aggressive and on their way up the buyer ladder. Many months can go into cultivating an individual who is suddenly promoted to another department. Replacement buyers looking to establish their own credentials often spurn the sources of the old buyer. And so you are left trying to get your foot in the store door all over again. If your persistence quotient is low, consider hiring a rep.

## Will a Rep Relationship Work for You?

One of the oldest clichés in business is that it takes money to make money. If you are ready to enter into an artist/rep relationship, you need to have some money in the bank. You need enough money to provide your rep (or reps) with a complete sample line every season (of which there are three to five a year). You need to be able to incur the cost of promotional material and/or brochures in quantity. You need to be able to afford and willing to accept the possibility that a rep may ask for work "on memo" (basically, consignment) in order to break into a potentially large, new account. And most of all, you need to be prepared to bankroll the increased production costs that accompany increased order fulfillment. This could mean being ready to contract work out, or getting more in-house help, but you must be ready with manpower and money for this scenario. Nothing destroys a new rela-

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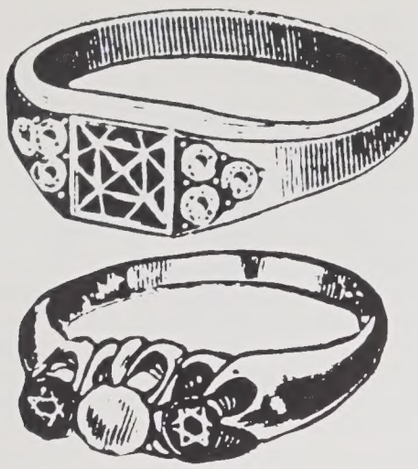

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tionship faster than an artist who can't fill orders. It may seem logical to attempt to avoid an early problem in order fulfillment by building up an inventory of finished work. But the experienced artists I spoke to argued against it. Roz Balkin counsels, "It sounds reasonable to try to have an inventory stockpiled, but it's really sticking your neck out. It's a question of dollars—a small business just can't afford it. At most, you could have three of everything in your line. But it's really advisable to know what your work capacity is—how many pieces you can produce in a certain amount of time—and promise fulfillment accordingly. Sometimes it's better to refuse an order if you can't fill it in the time specified. Or, try to arrange for partial fulfillment, say, 100 pieces in three weeks and the balance spaced out accordingly. The fact of the matter is, it's extremely rare to get a big order the first time you hit the marketplace."

Debra Fine Yohai agrees. "Even today after several years in business, I only produce on receipt of an order. You simply need to be all ready to go when the order comes in and to know your own production schedule."

After this, the success or failure of your relationship can depend very much on your attitude. Even though you are an artist—and all good reps recognize and respect that—you are entering a volatile, fast-paced, trendy world. There is room for you in it, but you must remember that this is not the craft-fair circuit, where your buyers return yearly and expect the same "look." This is not to say that you don't have to establish an identity in the fashion jewelry world—you do. But that identity has to be capable of evolution. It has to change with the season. If you view this change positively, you will see it as a great opportunity to be creative. If you view it negatively, it will be a hindrance to any long-term success.

There are jewelers who have tried to get around the reality of the seasonal line in the fashion world by creating a single production line and then going through the arduous process of finding the right rep for it. The rep takes the work, sells it to all appropriate accounts in a certain territory in six months and then returns to the artist for the "new line." Reps want "new" because store buyers want "new," since the consumers request "new." An artist with a single line, then, generally keeps a rep relationship for about six months. Since a good rep relationship takes so long to establish, it seems unprofessional to attempt to develop one for a short-term gain only. In fact, it is questionable if any gain is achieved at all, when one factors in the subsequent time necessary to develop a new contact.

The phenomenon of seasonal lines is not quite as frightening as it sounds. "New" could mean adding some new pieces to the old line, or new stones, shapes or colors. It doesn't necessarily mean radically new. It just means different.

One has to be "new" in relation to a very special calendar that governs the fashion world. It has five seasons:

| | |
|---|---|
| SPRING II: | shown in January |
| FALL I: | shown in March |
| FALL II: | shown in May |
| HOLIDAY/RESORT: | shown in August |
| SPRING I: | shown in November |

You are not expected to have entirely new lines for each of these seasons. The jewelers I spoke to did two to three at most; primarily January, May and August. But you can see that if your rep needs your Fall line in May, you had better be thinking about it the Fall before. Thus, another requisite for making your relationship work is the ability to think, plan and design ahead.

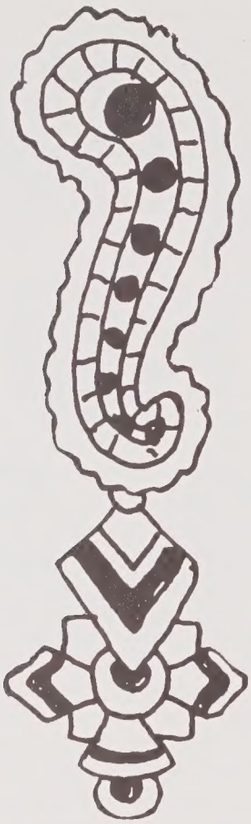
You are not expected to think in a vacuum. Regular perusal of *Acessories Magazine, Women's Wear Daily* and the top women's magazines (particularly the collections preview issues) will keep you informed of directions. Most of these are available in your local library. Don't underestimate the value of these sources. Most fashion trickles down from the top. When a prominent fashion designer accessorizes with large dangling chains and coins, and the magazines report it, "bold gold" will emerge the following season. Admittedly, not every design house initiates an accessory trend, and some seasons are even characterized initially by accessory ambivalence. This is where you as a designer learn to develop your own intuition and take a gamble on what you think will be "hot." But even in such a season, a good rep will not leave you in the dark. Reps Miller, Norem, Perry and Yonghi actually call their artists regularly with updates on specific trends. Kruger puts out a frequent newsletter outlining the new colors, patterns and looks as she learns of them.

Another important attitude is one of commitment. You and your prospective rep are professionals, and you are entering into a kind of partnership for mutual benefit. You must indicate your readiness to be a long-term part of the jewelry industry, and you must be willing to listen to the individual you choose to work for you. This may sound like reiteration, but the point bears repeating. Several artists spoke with resentment about this notion of "feedback." They took the "artist as prima donna" stance. But the production jewelry business is not a gallery forum where clients respond to your individual statement. In fashion jewelry, you respond to the marketplace. You must be willing to recognize the difference and to take into account an informed opinion. The reps I spoke to were sensitive to this situation. They admitted that buyers have a propensity for "redesigning" an artist's concept. Reps therefore do filter this commentary carefully and share with you only what they consider to be constructive remarks.

### How to Find a Rep

If you feel you can work within the guidelines outlined above, you may well be ready to look for a rep. Finding one you can work with is no small feat. Many artists have tested several before they found a workable relationship. It takes perseverance.

One obvious way is to speak to your peers. Other designers and jewelers may be able to make recommendations. Equally important, they may be able to steer you away from the unscrupulous. But do listen carefully: A bad experience could have been the consequence of misguided input or expectation. Similarly, if you know any local store buyers, you could try asking them. They, of course, see only one side of the arrangement; they can't tell you



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how well a rep treats artists, but they can be a source. If they do make a recommendation, ask them to introduce you—this can be helpful. Good reps, like good galleries, are deluged with requests. If you must begin the search process cold, trade publications can provide leads. Some reps take out illustrated ads that can give you a glimpse of the scope of work they handle. But try to find out as much information as you can before approaching them.

The most common, and possibly the best way relationships begin is through trade shows. Some artists set themselves up at a particularly well-attended show with the express goal of finding a rep. This works in two ways. Reps who do the shows, or at least come to the shows to track the trends, can approach you directly. Likewise, as you walk the aisles, you can spot reps and invite them to your booth. By and large, good reps are not actively seeking new lines. Yet none ignore one that really strikes them, or one they feel they can sell.

Being an exhibitor also shows you in a favorable light. It speaks immediately of a high level of professionalism and commitment. One artist found a rep from her own Southern town while both were attending a New York City show.

### What to Look for in a Rep

If you are genuinely interested in making the union work, acquiring rep leads leaves you with a lot of homework. In offering criteria for choosing a rep, virtually every interviewee put "liking the individual" at the top of the list. Incidentally, this came from reps as well as artists. Even if your rep is located in a distant city, you are really working very closely. It's hard to have phone contact daily (yes, sometimes) with someone you just don't like. Most people put a lot of faith in their own "gut" reactions. Related to this point is that of liking the rep's image. Do you feel comfortable with how they represent themselves and the lines they currently have? Is it the right image for you and for your work? Fashion sales is partially about fashion image—it should be appropriate.

Speaking of other lines, ask to look at them. You don't have to like all of them—in fact, you probably won't. Good reps make it a point to cover both broad tastes and broad price points to capture the widest range of potential sales. But the other lines should offer a similar level of sophistication and quality. On the other hand, there should be no similar line. Occasionally, an unscrupulous rep may make an arrangement with you when they already carry a similar line. This is done in an attempt to keep you out of their territory. You can easily prevent this situation by making sure you see all the rep's lines. And remember, reps may not bring all their lines to a given trade show. More on this, later.

In your initial conversation, it is important to ascertain that the rep has an understanding of art jewelry in general and likes your work specifically. Unless a rep is a rarely gifted salesperson, this becomes critical to their ability and inclination to promote your work. Other checkpoints on your list of a rep's personal strengths should be:

- Someone who you sense will make a commitment to you and your company.
- Someone who likes the idea of growing with you.
- Someone capable of taking "the long view."
- Someone with whom you can set goals.
- Someone who has their own goals and can articulate them.
- Someone whom you sense has genuine enthusiasm about their work and the ability to be persistent.

It is very difficult to judge a rep's level of business proficiency before working with them. You can ask about their dollar volume (which they may not share), their frequency of sales visits (if they go on the road) and their communication with their artists. You can find out about their advertising and promotion budget (which they may not have, or may not need if their business flourishes without it), just so you know whether you can expect any advertising on your behalf. You can inquire about their recordkeeping, although be forewarned that good reps are not necessarily good at paperwork.

Ideally, every time a rep makes a sales call on your behalf, they should provide you with an account card that indicates whom they saw, the date and the outcome. This helps you keep tabs on the operation. In return for this level of efficiency, you are expected to send your rep a duplicate invoice each and every time you ship to one of their accounts.

My final words about the actual process of looking for a rep are probably my most important. I thought they would have been obvious, and yet my interviews proved otherwise. Many artists' bad experiences might have been avoided by adhering to this most basic hiring procedure: *Check References.*

Any professional will appreciate your request for a list of artists and store accounts. It simply indicates that you, too, are a professional. Be aware that the list is subject to severe editing—a rep may not give you the name of a recently dissatisfied artist or store who dropped them. But by systematically checking every supplied reference, you may even be able to ferret these out. The point is to check every one. Other artists are your richest source. The jewelers network is a strong one, and any individual will share a lot of information if you are not afraid to ask. You should even ask artists to give you an idea of the range of sales (dollars or volume) the rep has been able to generate for them. And be sure to ask about the quality of store accounts and how quickly they pay.

### What to Look for in a Rep's Background

One might assume that the ideal rep has a long and proven track record. While longevity can be an asset, it is not always the case. Rep backgrounds vary wildly. Some very successful ones just plunged into the arena, filling a gap they identified. At the outset, artists took a gamble to be involved with them. But often the gamble paid off. Others were initially an employee of a large rep organization, which enabled them to learn the business before starting up on their own. Many were in the fashion business, in marketing, merchandising or manufacturing. At some point they decided to go into business for themselves in an area that requires minimal start-up capital. Finally,

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there are those who never worked before, or were in a totally different field—school teacher, real estate broker. In these cases, the seller and producer were usually friends before the liaison evolved, so the idea of "liking each other" was built into the situation. Where this was not the case, the potential rep saw the jeweler's work and responded positively to it. A relationship evolved, culminating in a business arrangement.

Many jewelers' first reps were the uninitiated. If your "friend" has a good sales personality, a good sense of business, a penchant for detail and perseverance, then such a relationship could work. Some of these situations have lasted for years, in part because each party has a high level of commitment. But remember, many maintain that "business and friendship don't mix."

### What to Expect in Sales

This is probably a section long-awaited by many readers, yet it may prove disappointing. Unfortunately, few guidelines can be offered because everyone has different needs and different expectations. The only objective held in common by every jeweler who has sought a rep is a desire to increase sales. Therefore, a spectrum approach to this inquiry will be the most instructive. There are people who have consummated agreements only to find their rep unable to write a single order for them. Almost as disheartening is the scenario wherein a rep writes a mere $500 a month worth of orders for them. But these are neither common nor ongoing experiences. The following case study will be illuminating: In 1981 Debra Fine Yohai was an artist living on the West Coast. She was making collages in wood, paper and nonprecious metals, when a department store buyer saw her work and asked if she would do a line of fashion jewelry. Yohai complied, and a rep who saw the results approached her. This woman took her work around in a limited geographic area and Yohai managed to gross $30,000 in her first year. Yohai moved to New York City and kept her California rep. Despite the distance she nurtured the relationship while gaining more business savvy. Ultimately, she, like virtually everyone else in her situation, went through several reps on both coasts. A sharp business woman, who learned from every encounter and experience, she evaluated each one carefully. The result is that she now knows, through strict maintenance of house accounts (discussed shortly) and her insistence on doing her own wholesale shows, that she is her own best rep. That hasn't prevented her from acknowledging that she can only grow by employing others to handle the bulk of her sales. Today, it is hard to open a major fashion magazine without spotting several credits for her jewelry company. She deals with several reps, has a business manager, advisor and bookkeeper. Her line of nonprecious, plated metal pieces wholesales from $15 to $90. In four years with reps, Yohai has grown to the point where this year she will fill over one million dollars in orders. Yohai's story is admirable, but hardly unique. Obviously, many factors contributed to her success. Strong personal commitment, attitude, marketability of her designs and certainly a little bit of luck are critical elements. But Yohai's case is important, because it illustrates that despite her own sales talent she relinquished some power in order to multiply her gains.

Because the reps I interviewed for this article are individuals who pride themselves on their personalized approach, it was particularly interesting to coax sales figures from them. As stated earlier, every one of them acknowledges the importance of their personal belief in the artist. Therefore, once they commit to an artist, they will give them up to a year to fulfill sales expectations. This of course varies with the overhead and number of artists each rep handles. Laura Kruger, for example, handles over 40 people. She knows that ultimately she needs to write $2,000 a month per artist, to maintain them in her organization. But she doesn't expect that at the outset. And since she has artists who frequently get $40,000 in orders for a month, she is able to give some leeway to those she believes will succeed in time.

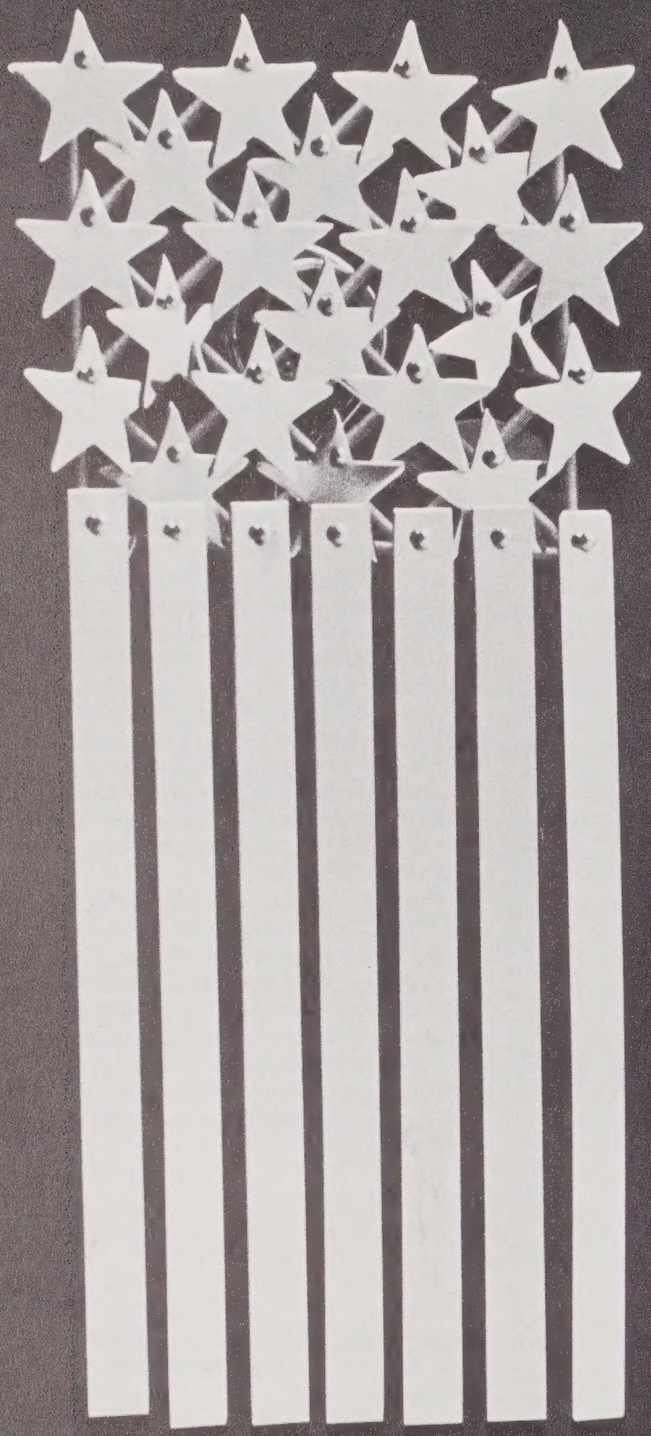
Dennis Perry has recently moved his young business from California to a New York showroom. With a variety of young talent among the 22 artists he shows, at this time he is allowing himself to carry lines that sometimes bring in less than $1,000 a month because he anticipates their growth.

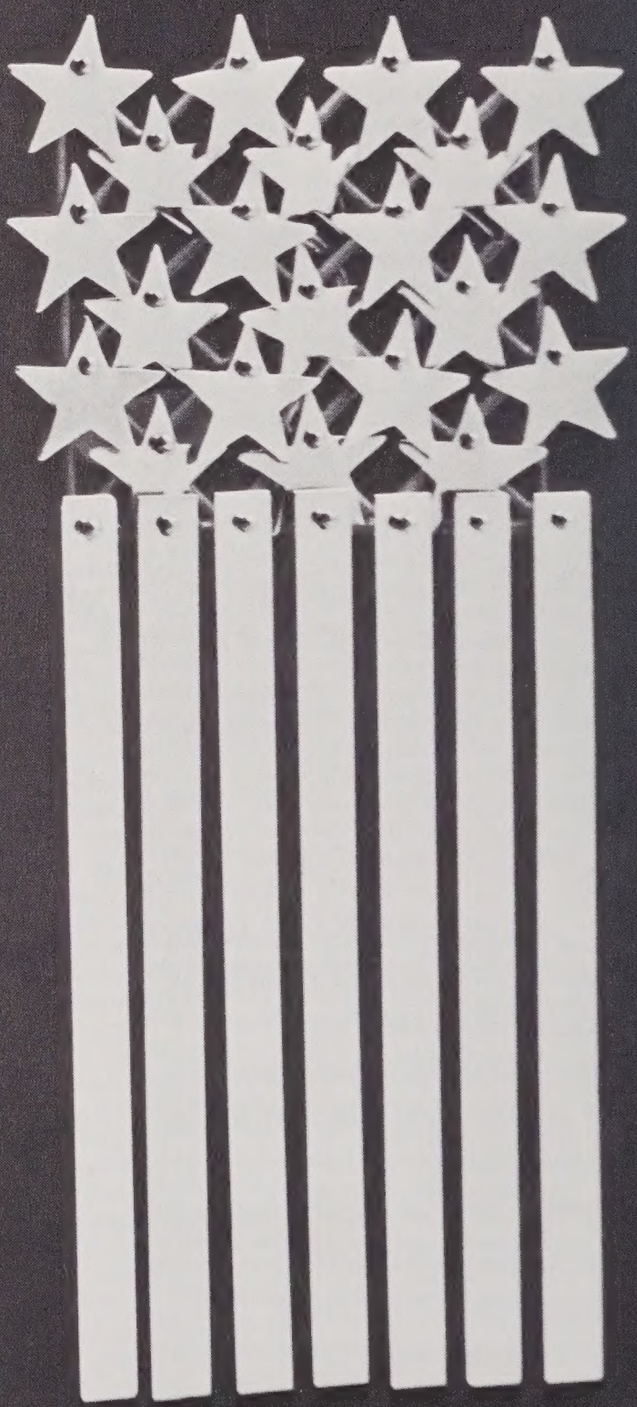
Finally, each artist must calculate the ultimate needs in sales from each rep to make the percentage arrangement profitable. You need to know how much your business costs to operate, what your house accounts generate, what your own show sales produce and what you need to maintain your chosen lifestyle. After that, you will be able to set future sales goals, predicated on a successful rep relationship.

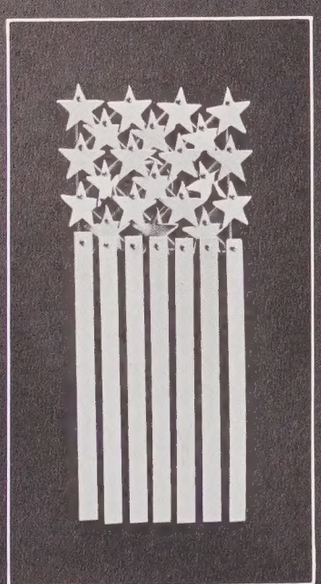
*This is the first of a two-part article on jewelry reps. Part Two will appear in the next issue, Spring 86.*

*Reps representing multiple clients who participated in this article are: Kruger Gallery Collections, 870 Madison Avenue, New York, NY 10021, telephone (212) 734-6808; Dennis Perry, 109 West 38th Street, New York, NY 10018, telephone (212) 921-9033; Younghi Associates, 10-112 Apparel Center, Chicago, IL 60654, telephone (312) 670-0091; Janet Norem, Inc., 385 Fifth Avenue, New York, NY 10016, telephone (212) 685-2236.*

*Vanessa Lynn, former art and architecture librarian at Pratt Institute is currently director of The Gallery at Workbench in New York City.*







# The 1985 Platinum Jewelry Design Competition

*by David Revere McFadden*

*The Johnson Matthey/Society of North American Goldsmiths Platinum Jewelry Design Competition celebrates its third anniversary this year. The competition represents a coordinated effort on the part of SNAG and Johnson Matthey to promote the use of platinum in the design of jewelry through subsidized participation. The competition is but one brief chapter in the long history of platinum, but an innovative effort to bring platinum into the mainstream of jewelry design and fabrication.*

Platinum—the third member of the triumvirate of precious metals that includes silver and gold—was a significant material in the design and fabrication of jewelry and ornaments by native Ecuadorians well before the period of Spanish conquest. The extraordinary history of this rare metal, from its early use among the Indians of the New World to the end of the 19th century has been compiled in Donald McDonald's *History of Platinum (London, 1960),* a volume that examines both the artistic and scientific history of the metal. From the end of the 19th century to the present day, however, platinum has been the Cinderella of jewelry, serving the role of a faithful and dependable background support for expensive, coruscating gemstones. Blessed with virtues such as durability, strength, purity of color and resistance to tarnish and corrosion, platinum has proven to be a sturdy and modest counterpoint to radiant and colorful stones. At the same time, platinum has been cursed by its apparent resemblance to silver; although its inherent value may be equal to or greater than gold, the undisputed queen of the precious metals, its physical appearance carries with it none of the rich and immediately recognizable color of its precious sister.

The low esteem given to platinum as a precious metal in its own right is confirmed by its very name, derived from the Spanish "platina," or "little silver." When platinum from South America was first brought to the attention of Europeans, it was by way of Spanish explorers who recognized the idiosyncratic nature of this silver look-alike. Platinum was a curiosity brought back to Europe for the delectation and experiments of natural historians and, as such, was classed as a poor relative of silver.

In the 18th century ambitious attempts to make use of the metal included a large number of scientific experiments intended to reveal its metallurgical secrets and the processes essential to its manipulation. Its application to the concerns of the goldsmith was of limited success; the most noteworthy examples of *objets de luxe* made from the material are to be found among the few extant works by the French goldsmith Marc-Etienne Janety, active in Paris in the latter decades of the 18th century.

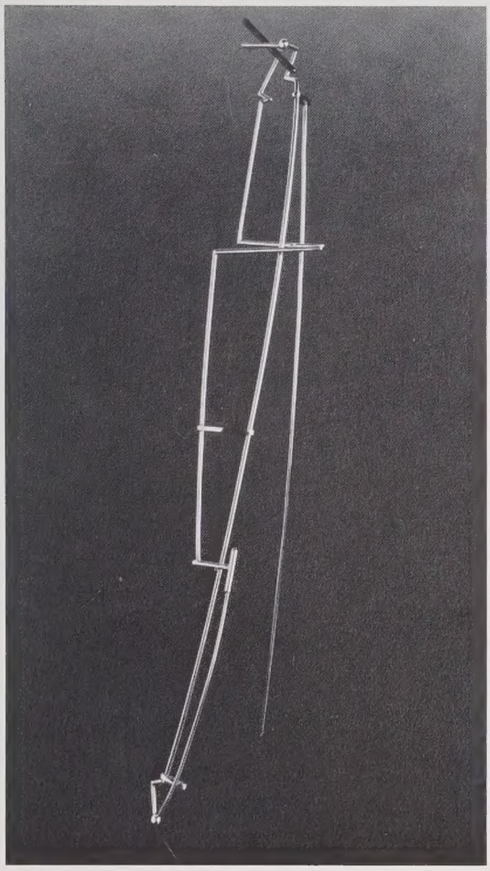
**Opposite page:** Whitney Boin, Grand Prize, *Stars & Stripes* earrings, platinum, **inset:** actual size; **Top:** Marc Etienne Janety, *Sugar Bowl,* platinum, 1786. Courtesy: The Metropolitan Museum of Art; Gift of Dr. and Mrs. A.L. Garbat, Manya Garbat Starr and Julian A. Garbat, by exchange, and Harris Brisbane Dick Fund, 1974. (1974.164). **Above:** Fabergé, *Ladies Compact & Finger Ring,* platinum, 3 13/16", c. 1900–1914. Courtesy: The Metropolitan Museum of Art; Gift of Ortam Blickman, Inc., 1976 (1976.205)

Although current research being conducted may help to bring to light other works by this important goldsmith, by far the best known of his works is a magnificent covered two-handled sugar basin, now in the collection of the Metropolitan Museum of Art, New York. This exceptional work, following closely the models for similar tabletop refinements made by 18th-century silversmiths, treats a neoclassical theme with grace and elegance. The body wall of the sugar basin in fully pierced, necessitating the use of an interior glass liner that provides a visual contrast to the lustrous metal. The sugar basin is architectural and monumental in conception; four tapered pilasterlike elements that define the upper body of the vessel are supported upon claw-and-ball feet. The interstices between the upright pilasters are filled with finely pierced and chased fruit and flower garlands, while the central portion is enriched by classical figures in relief of a satyr and a sleeping female. This unusual example of the goldsmiths' art applied to platinum is engraved with the signature of the maker and the date 1786.

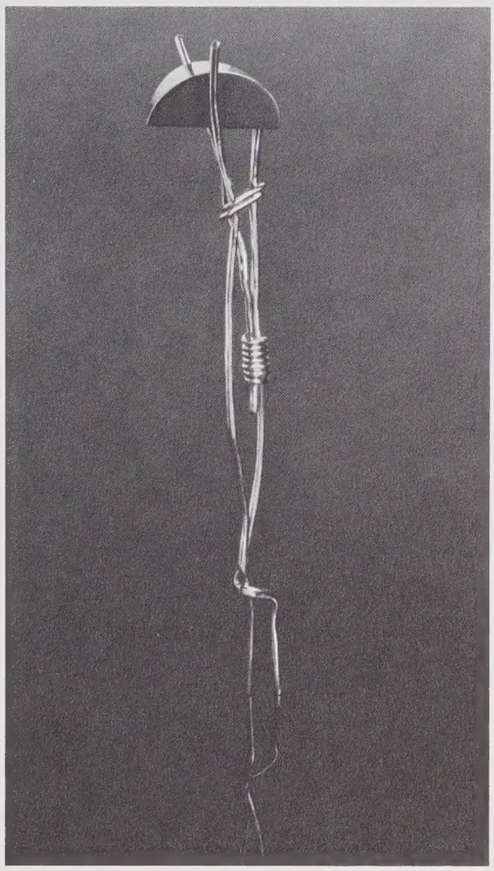
In the 19th century, platinum was among the variety of remarkable and diverse materials used in the workshops of Fabergé in Russia, not only as a setting for precious and semiprecious stones, but as the major material for bibelots such as ladies' compacts. Also at the Metropolitan Museum of Art is to be found such a compact—a rectangular flat box with a border of faceted diamonds. The compact is suspended from a chain of set diamonds and fitted with a platinum and diamong ring intended to slip comfortably over a finger when the compact was in use. By the early decades of the present century, platinum had proven its value as an ideal setting for precious stones, and richly encrusted brooches, glittering with diamonds, rubies, amethysts and pearls were produced in distinguished ateliers such as that of Cartier in Paris. It is interesting to note that during the 19th century some of the most experimental works with unusual metals were carried out in materials today far removed in rarity and value from platinum: In the collection of Cooper-Hewitt Museum is a

Jocelyn Burton, *Chalice,* platinum, 1976 Courtesy: The Worshipful Company of Goldsmiths

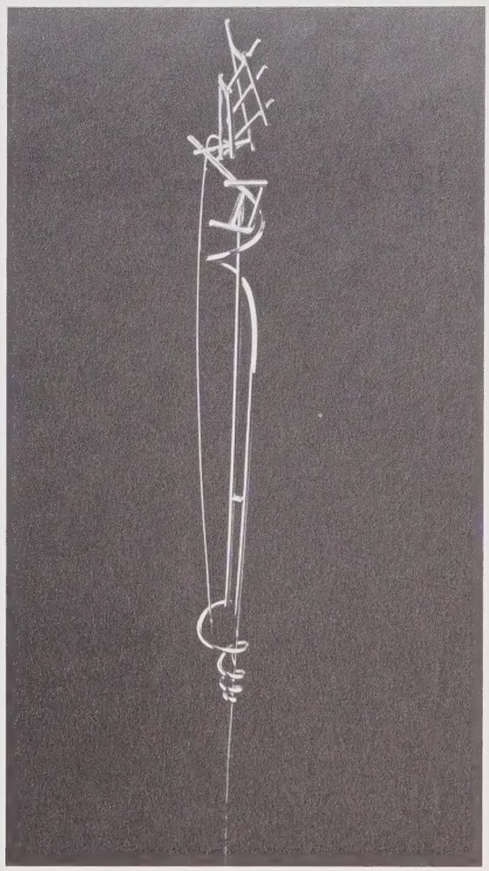
Tom Muir, Second Prize, *Pin,* 18 and 20 ga. platinum wire, 18 ga. sheet, black steel



Myra T. Mimlitsch, Second Prize, *Brooch,* platinum, 14k gold



Hiroko and Gene Pijanowski, *Brooch,* platinum



suite of jewelry made of aluminum, the metal we now identify with soft-drink cans.

It was not until the mid-1970s that platinum was accorded a place of honor among the precious metals in England, where a special series of marks for platinum was first used. The first vessel bearing the British platinum hallmark was commissioned from Jocelyn Burton in 1976, a covered standing cup with a stem and finial composed of undulating bands of platinum.

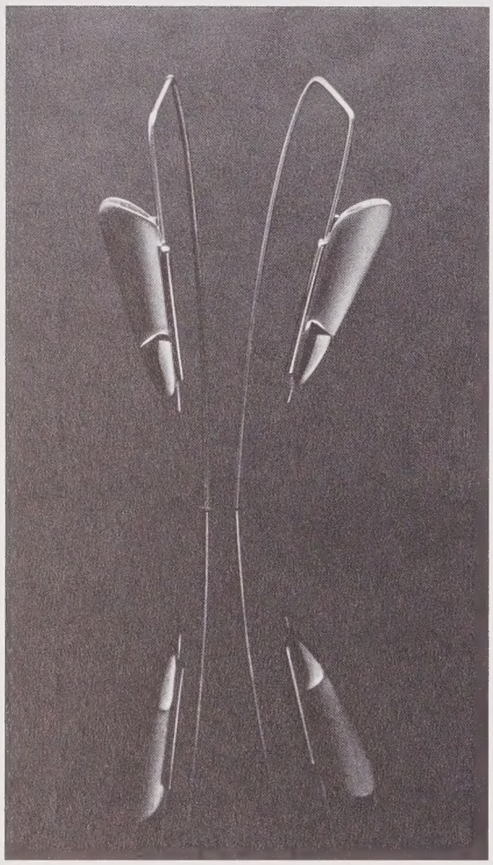
The nascent interest of studio goldsmiths and jewelers in the use of platinum as a metal in its own right, and not only as a background for precious stones, required encouragement. Although individual metalworkers in the United States and abroad infrequently used platinum, several problems were immediately apparent to anyone who chose to work with the material. In addition to the expense of investment in the precious metal, which severely limited free experimentation, few opportunities existed for exhibition and sales. Combined with the undeniable fact that platinum resembled silver rather than gold, the expense of production and the difficulty of marketing such expensive jewelry effectively removed platinum from the repertoire of materials in common use among goldsmiths and studio jewelery designers.

The need to stimulate the use of platinum as a viable alternative to silver and gold in studio jewelry design was recognized by the platinum industry itself. Although platinum has remained in general use for gem settings among manufacturers of jewelry, the primary applications of platinum were industrial, specifically as a catalytic agent for the production of fertilizers and in pollution-control devices for automobiles. In 1983 Johnson Matthey, Inc., a leading producer and supplier of platinum, established a working relationship with the Society of North American Goldsmiths to create an annual platinum jewelry design competition, an effort spearheaded by David Lundy of Johnson Matthey. As announced and illustrated in the Fall, 1983 issue of *Metalsmith,* this innovative design competition was intended to encourage the use of platinum "in new and different ways," to expand the jewelry possibilities of the metal and, importantly, to "provide an opportunity for metalworkers to execute their creative ideas directly in platinum." Each year since 1983 the competition has been conducted along the same lines: Members of SNAG were invited to submit a single design for a piece of platinum jewelry. The sketches were reviewed by an invited jury and 10 designs selected. Johnson Matthey, Inc. supplied each qualifying designer with up to 10 dwt of platinum, with the request that the material be used to execute the design exactly as submitted. The final products were assembled and juried, and from this group the winners were chosen.

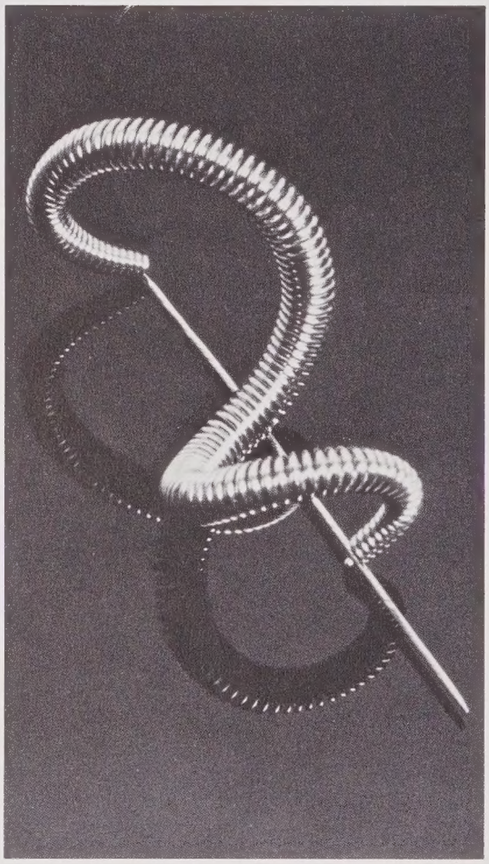
In the 1983 competition, the Grand Prize was awarded to Whitney Boin for his *Radar Earrings* composed of thin horizontal wires of platinum held within movable circles, while the First Runner-Up awards were given to Lynda Watson-Abbot for an asymmetrical sandblasted brooch and to Phillip Fike for his animated *Forged Drop* earrings. For the 1983 competition I was a juror with Glenda Arentzen and Gary Griffin. Arentzen commented on the "unique qualities of platinum" revealed in the designs, while wearability and salability were less significant aspects of her choices. Griffin, another working metalsmith, noted that the three winning designs were carefully related to the placement of the jewelry on the body. While agreeing that the winning pieces were all "wearable," Griffin acknowledged that the 10 dwt limitation on weight may have restricted the designs. Judging from the point of view of design history rather than as a working metalsmith, I appreciated the technical expertise and visual exuberance displayed in the designs.

A primary question that arose during the first jurying session, and one that has remained important in subsequent deliberations, was whether or not the use of platinum rather than another material was a significant factor in the design and execution of the piece. In many submissions, the jurors recognized works that incorporated movement as a part of the design; along with refinements of structural delicacy that required unusual strength in

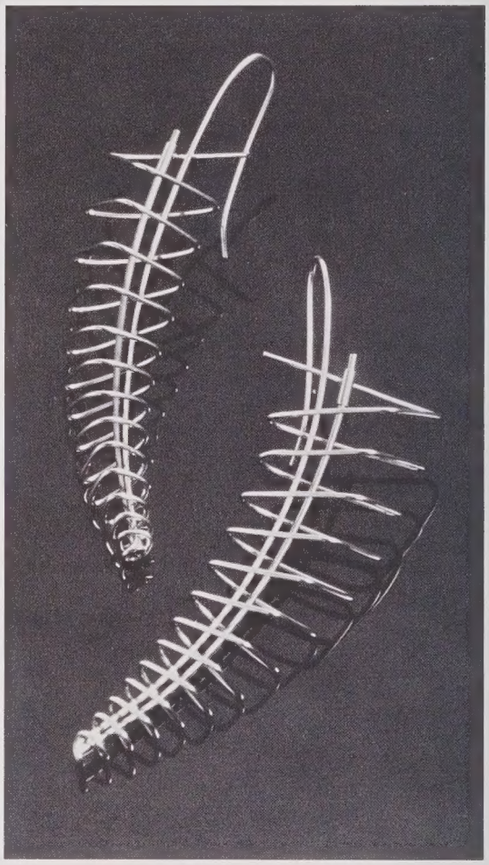
Holly Goeckler, *Earrings,* platinum, 14k gold



Dean A. Smith, *Brooch,* platinum



Kye Yeon Son, *Earrings,* platinum, titanium



the material, such considerations indicated an awareness that the inherent strength of platinum facilitated innovative designs. These practical considerations were, in the end, less significant than the basic design quality and wearability of the jewelry. All of the jurors acknowledged that a number of the designs submitted were of less interest than might have been hoped for or anticipated. Another consideration had to be borne in mind during the jurying process: In any open competition, it is not assured that the most talented and capable of artists and designers will actually make the effort to submit. If the more innovative and successful of jewelry designers do not choose to participate in open competition, is the survey an accurate profile of the current state of jewelry design among the membership of SNAG?

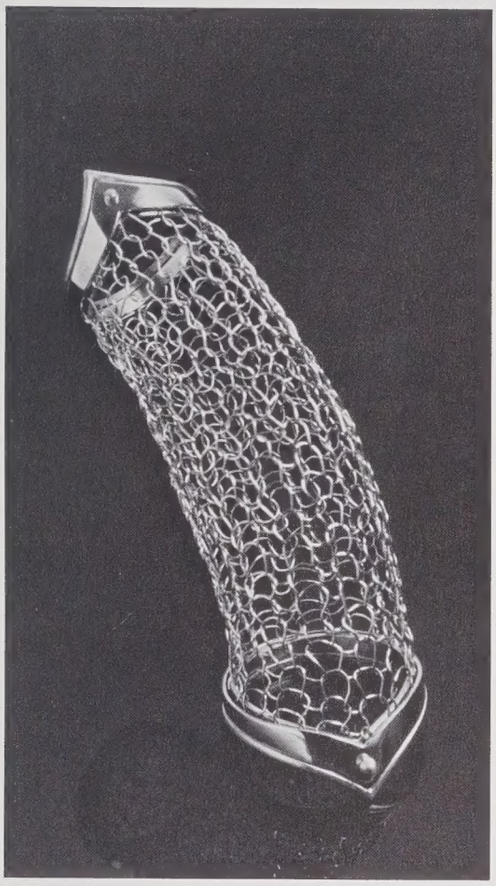
For the 1984 competition, a different group of jurors were brought together that included Ettagale Blauer, Deborah Aguado and the 1983 Grand Prize winner Whitney Boin. In her juror's statement *(Metalsmith,* Fall, 1984, where the winning designs are illustrated), Blauer recognized the problems inherent in judging the quality of an idea from a sketch alone, reminding us that a poorly executed drawing may contain the germ of a good idea that can only be revealed in the finished work. Blauer went on to itemize the criteria used in the selection of the winning designs, including considerations of the technical feasibility of construction, whether or not the design made the best use of platinum's intrinsic qualities and, most importantly, originality of ideas.

The Grand Prize in 1984 was awarded to Norman Cherry of Scotland for his *Rainbow with Arrow* brooch that used platinum wire as the basis for a highly textured woven structure. Blauer pointed out that the tensile strength of the metal was important in the design and execution of the piece, while runner-up Susan Hamlet exploited the same tensile strength of the material in her *Flexible Column Bracelet.* Lynda Watson-Abbot, also a runner-up in the 1984 competition, took a completely different approach to the material, using the platinum in combination with gold to create a sophisticated and elegant graphic design.

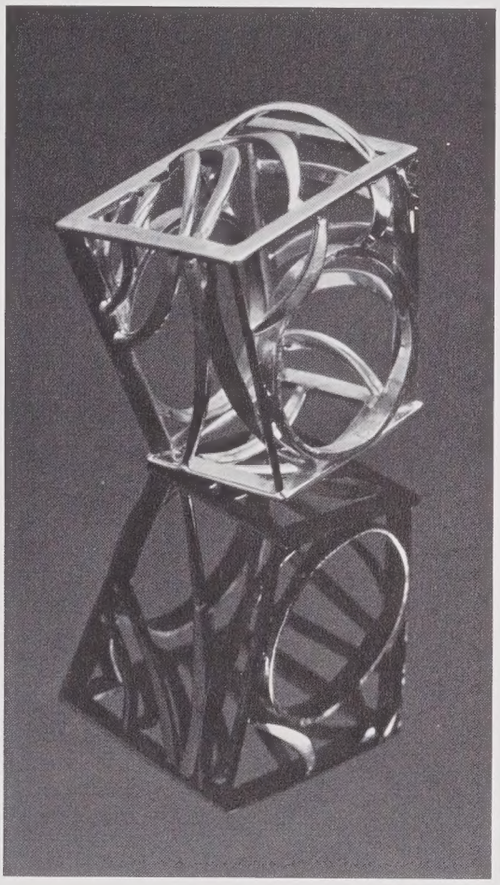
In her review of the competition Blauer pointed out that many of the designs submitted to the jury were not indicative of the final product. Specifically, designs that suggested sculptural weight and substance were translated into objects that were flat and two-dimensional, or designs that promised rich textures resulted in objects that did not fulfill the promise. Blauer raised a question about the amount of weight that should be given to the initial sketch and admitted that "not every metalsmith is adept at drawing on paper." Although this problem is familiar to anyone who serves on a design jury, I feel that the presentation aspect of a designer's work merits careful consideration, since the judgment must necessarily rest upon this initial, albeit sometimes unfair, indication of an idea or concept to be realized. If the SNAG competition is intended to stimulate creative thinking in the area of platinum jewelry design, it should also stimulate creative thinking about the professionalism of the artist/designer. As objectionable as it may appear, professionalism is reflected as clearly in the presentation of an idea as in the finished work.

With Platinum Jewelry Design Competition completed for yet another year, now seems an appropriate time to review not only the winners of the 1985 competition, but the potential effect of the competition on the field. Again this year, I sat on the jury, this time with Sharon Church and Robert Lee Morris. For the second time, Whitney Boin was awarded the Grand Prize for his earrings, animated and lively forms based on the stars and stripes of the American flag. Even in his initial and anonymous sketch, the jury recognized that the design contained a delightful promise that was admirably fulfilled in the finished work. The two second prize designs clearly fell within the framework of a number of earlier designs that exploited the impressive strength of the material. Both Tom Muir's and Myra T. Mimlitsch's brooches made effective use of platinum wire to create evocative abstract shapes. While Muir's earrings appeared to be skeletons of architecture, Mimlitsch's brooch combined the simplicity of a found object—a segment of

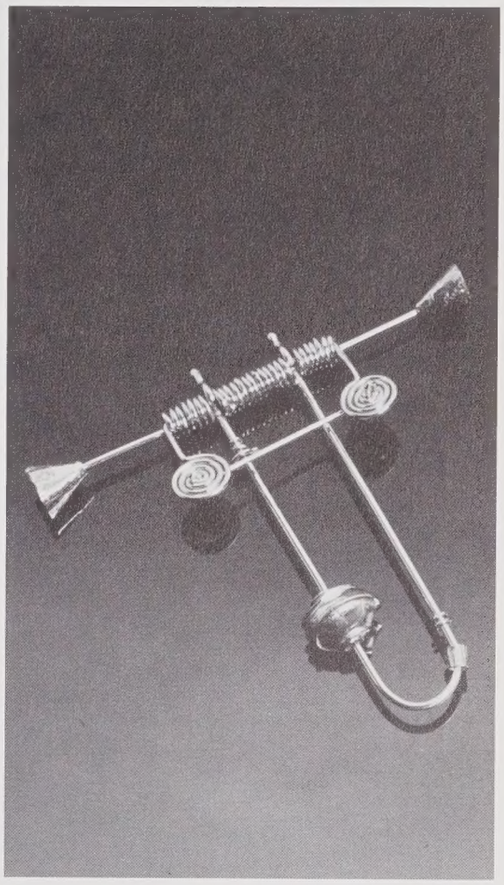
Debra Stark, *Finger Ring,* knitted platinum accented with 22k gold



Glenda Arentzen, *Finger Ring,* platinum, 14k gold



Tim McCreight, *Brooch,* platinum, 18k gold



barbed wire—with the provocative poetry of a ritualistic symbol.

Other designs submitted following initial jurying of sketches lacked the visual and sensual presence of the three winning works. Of more than passing interest, however, was Debra Stark's woven finger ring; although the design suggested a fresh approach to the material, the ring as executed was not especially comfortable to wear, did not permit ease of movement for the finger and appeared to be too self-consciously "designed." Other ideas that made use of platinum wire were of interest, but sometimes lacked sound esthetic followthrough: entries by Tim McCreight, Kye-Yeon Son and Hikoro and Gene Pijanowski all used wire to create abstract linear forms, but all appeared stronger on paper than in reality. An intriguing design for a finger ring was submitted by Glenda Arentzen that combined a rectilinear structure with a "caged" spiral of platinum. As with several other examples, the idea was attractive, but the final product more of an impediment that an ornament that worked gracefully with the hand of the wearer. Holly Goeckler's delicate and winglike earrings succeeded in both sketch and in execution, but their attenuated forms and precarious balance made them less successful on the ear than might have been expected. Dean A. Smith's wormlike brooch elicited great discussion among the jurors; although it was not felt that the design was particularly innovative, it was a highly wearable and appealing example of a piece of jewelry that could be readily worn by women or men. It has often been lamented that there have been so few designs submitted for men's jewelry as a part of the competition; this design, although not an award winner, was a refreshing change from the bulk of the entries for earrings and brooches.

After three years of the Johnson Matthey, Inc./SNAG Platinum Jewelry Design Competition, it is reasonable to ask whether or not the competition has met its stated goals. Obviously, it has stimulated new work among a talented and ambitious group of young metalsmiths, and their work has been brought to the attention of the public. This alone, I believe, has made the competition worthwhile. It has always been hoped that the competition would encourage continued efforts and experimentation in the use of platinum, but this remains to be seen in the careers of the participating goldsmiths. At the same time, it is clear from the selection of initial entries each year that many talented members of SNAG do not choose to submit to an open juried competition and that the selection each year does not accurately reflect the membership of SNAG. If the members of SNAG feel it worthwhile to ask for industry support of such competitions, it behooves them to make a stronger effort to participate.

From a subjective point of view, having served as a juror for two competitions, it seems that an even greater problem may exist within the community of metalworkers itself. A majority of the designs submitted do not reflect innovative thought on the part of the artists, nor an unusual, fresh approach to platinum itself. It sometimes appears that the goldsmiths are content to repeat ideas they have found successful in gold or silver and to simply translate them into another material. Throughout history, the art of the goldsmith has been among the most conservative and traditional due to the close and unavoidable relationship that exists between design in the precious metals and economics. However, those goldsmiths who have helped to rewrite the history of their art and craft have had the courage to pursue radical experiments within the constraints of their material and according to the opportunities that come their way. If the platinum industry is committed to the continuation of such a competition, it is necessary to complete this equation by asking for capable artists and designers within SNAG to make an even greater effort to match this commitment.

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# Master Metalsmith: RUTH PENINGTON

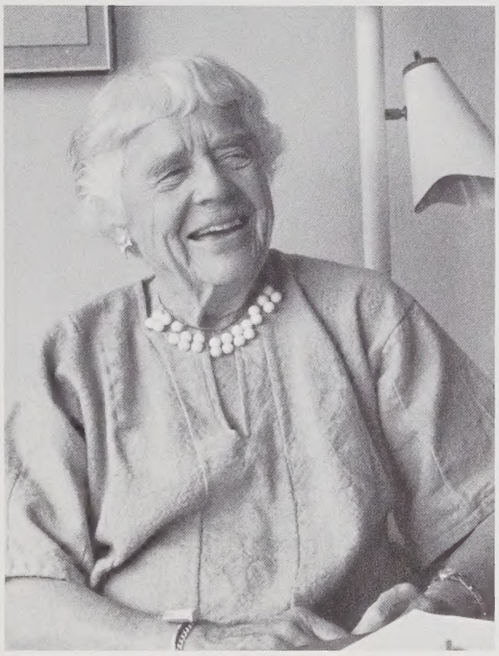
*by LaMar Harrington*

*"I had my very first work in silkscreen printing with Ruth. I learned the rudiments in this only formal education I ever had in silkscreen, which has become so important to my career. Her personality too—easy, sisterly rather than stern—helped me to grow in confidence and to take things less tensely and perhaps, as important, I learned so much from her about lifestyle and the enjoyment of life. I was going through a temporary idealism in which I wanted no possessions. Ruth began to wear new dresses, simple white jewelry—all this setting off a new suntan—such freshness. I realized that this was not vanity, but her gift to us—to come on wonderfully and I began to think of possessions as a way of sharing, and family and friends were all the more grateful for it."*
JACK LENOR LARSEN, designer

*"She was tough and professional and demanded excellence—too bad there aren't more like her in academe."*
PHILIP MCCRACKEN, sculptor

*"She sang a bit in class. I think she has some vaudeville in her veins. Once I melted down one of my projects. She said 'don't worry' and then flunked me! I loved her strong personality."*
IRWIN CAPLAN, humorist and cartoonist

*"She was a leader in developing the excitement of the craft movement. She had a profound effect in building patronage for the crafts."*
RUSSELL DAY, jeweler and teacher



**Opposite page:** *Bowl,* sterling silver, 3⅛" h. x 4⅛" d. Photo: Roger Schreiber. **Above:** Ruth Penington. Photo: Claudia Ebling. **Below:** *Necklace,* sterling silver and ermine tails, 16½" inner circum. Photo courtesy: University of Washington

At the age of three, Ruth Penington created an apron for her doll, undaunted by the complexities of a pocket, hem, belt, lace edging and insertion of a blue ribbon. Today, seventy-five years later, an artist, designer/craftsman and teacher, she is recognized as one of America's pioneers in the field of modern jewelry and metalwork. Very early, she was inspired and influenced to choose a life committed to art and to people. While there seem to have been no role models, there were plenty of teachers along the way whose philosophies encouraged the development of fearless individualism and of originality in the arts. Penington's life and art are marked by constant search, careful preparation, disciplined commitment and high expectations of herself and others. Her battles have been positive and constructive, dealing with such philosophical beliefs as the need for support of the arts and humanities in the American university system and the advocacy of "hand crafts" in a hierarchy that valued the "fine" arts above all others.

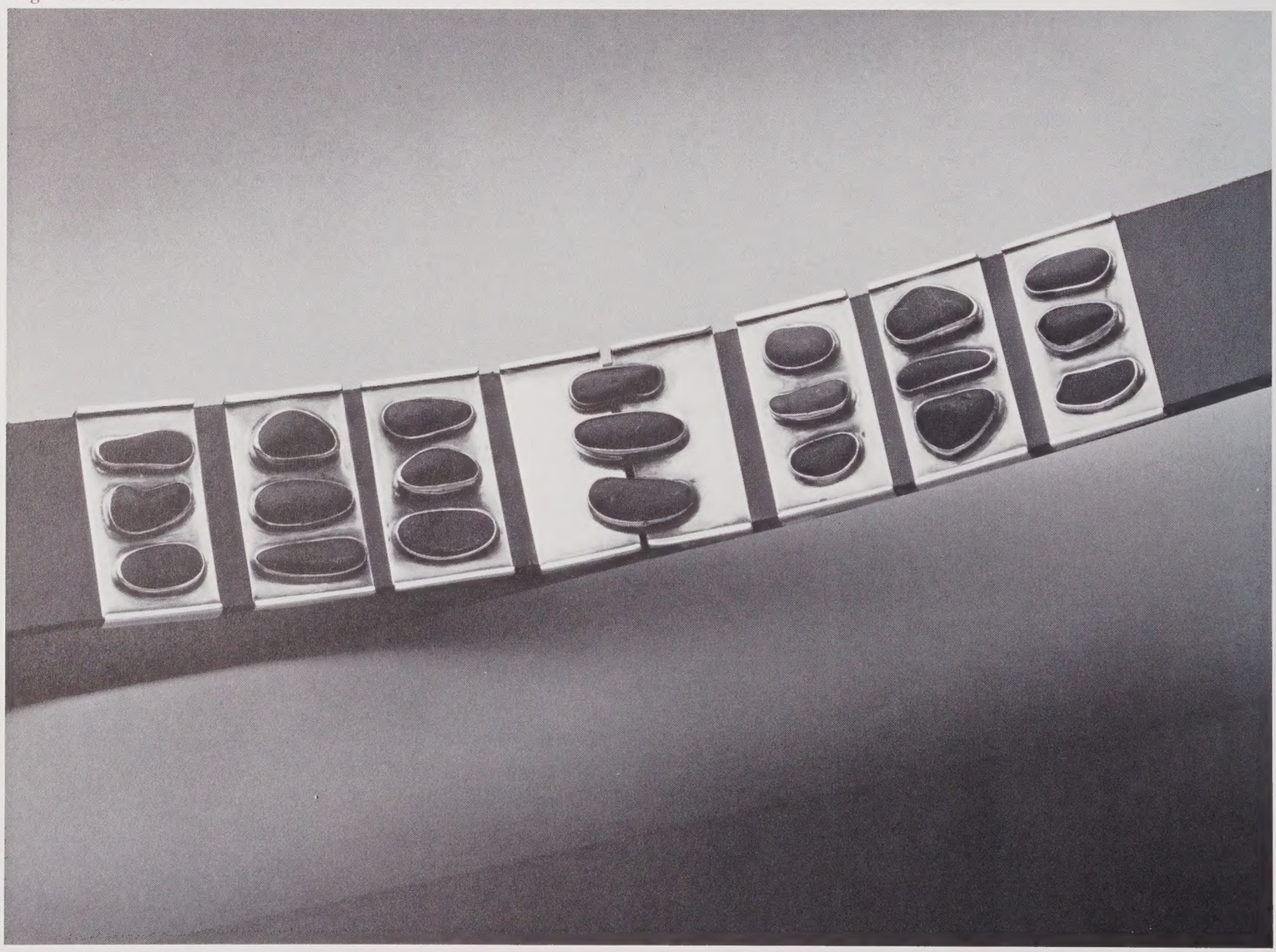
Although one thinks of Penington as a Puget Sounder, she was born in Colorado Springs in 1905 and was taken to Seattle soon after. Art and handwork were her heritage from her immediate family, who gave her plenty of encouragement in all her pursuits. Even before her schooling began, she molded and sun-dried toy dishes from clay she dug herself, and early in primary school she wove a wool rug with a design. Penington's paternal grandfather was a woodworker and a carriagemaker, who later built automobiles and airplanes. Her father was skilled with tools. Her mother, a dressmaker who designed elegant clothes, came from a family of Pennsylvania farmers who had to know how to do everything. This crafts atmosphere, combined with a philosophy of self reliance, was the first of many confidence-building milieus that shaped Penington's life and work.

When Penington was 14 years old, Lulu Hotchkiss, a teacher at Seattle's Lincoln High School who had previously taught in Chicago and Hannibal, Missouri, came into her life.[1] Hotchkiss transmitted to Penington the esthetic gospel of the philosopher-historian Ernest Fenollosa and the artist-teacher Arthur Wesley Dow. This team, working in the late nineteenth and early twentieth centuries, interpreted to Americans non-Western art,

**Above**: *Necklace,* gold, rose glass beads, 1960. Photo courtesy: University of Washington. **Below**: *Belt,* sliding panels of sterling silver inset with beach pebbles, mounted on leather, each panel 1¾" h., 1952. Photo: Roger Schreiber

including Oriental, primitive, and archaic art, in new esthetic terms with social overtones. European academic art, dominant since the Renaissance, emphasized copying nature through the use of geometric perspective and modeling in light and shade.[2] Opposing such principles, Fenollosa and Dow taught that the artist should use the "synthetic," or "structural," method of selecting from limitless visual possibilities and arranging expressively those that would create the most original and pleasing work of art.

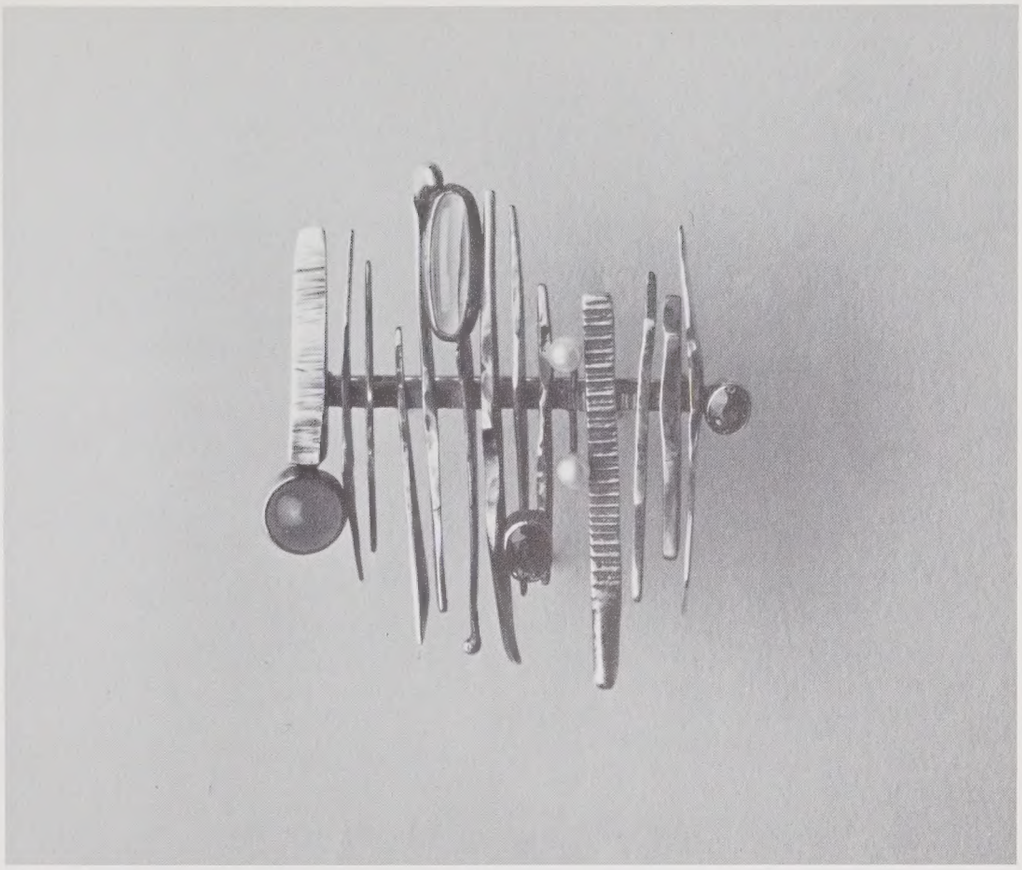
Fenollosa's theories were not confined to painting but encompassed all three-dimensional work and all materials. "At creative periods all forms of art will be found to interact. From the building of a great temple to the outline of a bowl . . . all effort is transfused with a single style"[3] He held that "Art . . . requires . . . freedom and trained selectivity, for only in this way can an artist discover that unique arrangement which is beautiful. To live artistically, in this sense, is to live as an individual."[4] Fenollosa seems to have expected that the artist trained in making esthetic choices would transfer this ability to making choices in everyday life. He "felt sure that if a citizen developed an artist's eye he would never conform timidly to narrow rules of living and the deadening pressure of the average."[5] He further believed that artistic creativity depends on a free society with a climate of intellectual freedom and that the best art has been pro-



duced in such periods.[6]

While Fenollosa concentrated on theory, Dow, as head of the Fine Arts Department at Columbia University's Teachers College, was in a favorable position to spread their ideas throughout the schools of the United States. His best-known book, *Composition,*[7] was the educator's bible. It taught a three-part system, which emphasized line, color and, especially, *Notan*—a Japanese term meaning "dark and light" or well-spaced "massing of tones of different values," not to be confused with the European notion of "light and shade," or modeling.[8] Fenollosa's theories and Dow's system, as demonstrated by Lulu Hotchkiss in her drawing classes, had a profound effect on Penington. Her options for a career in art were wide open in this liberated atmosphere, where no one suggested that any one medium was more important that another.

After graduating as valedictorian of her class, Penington entered the University of Washington and began a 46 year association with the School of Art, first as student, then as faculty member. From the beginning, she was surrounded by teachers trained in the Dow system at Columbia. Central to her continued indoctrination were Walter Isaacs, painter, and Helen Neilson Rhodes, printmaker and design teacher. Penington remembers Rhodes's woodblocks, with their contrasting values, and her teaching of design with emphasis on "dark against light, light against dark . . .," as the



**Above:** *Pin,* silver, gold, Mexican opal, citrine, amethyst, topaz, pearls, 2⅛ x 2″ **Below:** *Teapot,* plated silver with lucite handle, 6⅜ x 10 ½″. Photos: Roger Schreiber

embodiment of the *Notan* theory. Others on the faculty, many of whom had studied in Europe, were also schooled in the Dow system. Penington's early training was reinforced later by a year of study at Columbia Teachers College in 1929 and a summer with a Dow disciple at the California College of Arts and Crafts in 1935.

Penington speaks of the range of resources open to students and faculty at the University of Washington. The School of Art had a close tie-in with the School of Home Economics' classes in the history of textiles and techniques and with the anthropological museum, the Henry Art Gallery and the School of Business. She says, "We were on good terms with the College of Architecture, the College of Engineering, the foundry, the machine shop and with the Seattle Art Museum in Volunteer Park. We also benefited from the many visiting faculty members, including [Amédée] Ozenfant with his understanding of modern art and [Alexander] Archipenko who brought the European tradition."

As early as the mid-twenties, when all students in the University of Washington's Department of Painting, Sculpture and Design took the same basic courses, Penington worked in many media and began to realize that the metal division appealed to her. "Metal can be made richer on the surface and freer in form than just drawing" By the early thirties she had become proficient enough in metalwork to be invited to show at the Seattle Art Museum, and in the forties and early fifties she also exhibited woodblock prints on both textiles and paper. Her jewelry and holloware were first seen nationally in invitational exhibitions held at the Baltimore Museum of Art and the Cincinnati Art Museum in 1944.

**Above:** *Bracelet,* silver, 14k, pearls, topaz, moonstone, garnet, jade, citrine, band ⅝" w. Collection: Dr. Joan Hampson. Photo/courtesy: University of Washington. **Below:** *Bracelet,* 10k gold, natural cabochon agates, ca. 1959. Photo: William Eng

Penington's metalwork has moved in two parellel directions: richly encrusted works of visual delicacy and those marked with a monumental feeling, as if she were thinking architecturally and expansively in the planning stages. In these last, provocative in their time, large, flat and simple areas are related to other large, simple areas contained within a generous form. Her mentor, Walter Isaacs, emphasized this "bigness," saying that searching out "the larger elements of truth in painting the figure" paralleled the approach of the design student, who "is usually trying to *create* forms. But in each case the work must proceed from large forms into smaller parts."[9] Penington was a leader in developing jewelry that is monumental in scale, so much so that juries sometimes rejected her work because it was "too big to be wearable." Although many of her pieces are large, they are comfortable to wear. She says, "The material, the techniques, the scale of the wearer, the functional aspects all dictate the approach." On the occasion of Penington's retrospective exhibition in 1962 at Seattle's Henry Art Gallery, Isaacs wrote to her, "It is as if metal were clay in your hands. You have risen above the difficulties of the craft and have reached expression."[10]

Penington's work draws generously on archaic and primitive arts for inspiration and she makes use of spindle whorls, trade and tomb beads, amulets and feathers. She also incorporates forms and decorations inspired by Byzantine, Viking, pre-Columbian, North American Indian and other art, sometimes combining several traditions in one piece. "Today we have easy access to all of history and all of the world. Technicians are skillful and may continue to use the old patterns. But why copy work when someone did it better?"

Moved by the urgings of such activists as Lulu Hotchkiss, Walter Isaacs and Helen Rhodes, and by the encouragement of her mother and the educational theories of John Dewey, Ruth Penington enlarged her world. In 1934 she began to travel in the United States and abroad, following Isaacs' advice to learn from art, not just from slides and books. Among the areas she visited were Europe, Russia, South America and Japan.

After Penington's advanced training at Columbia's Teachers College in 1929, she attended the Carnegie Art Program at the University of Oregon in 1931 and 1932. She worked with Gilbert Rohde in New York City for a year in 1944; with English silversmith William Bennett at a Rhode Island School of Design workshop arranged by Margaret Craver in 1947; and in the shop of A. Michaelson in Copenhagen in 1952. She taught at the University of California, Berkeley, in the forties and at the University of Alaska in the fifties. In 1955 she established her own Fidalgo Sumer School of the Allied Arts in La Conner, Washington.

Ruth Penington was a founding member

of organizations established to help artists and craftsmen. They include Lambda Rho, an honorary art society at the University of Washington; the Northwest Printmakers' Society; Northwest Designer-Craftsmen; and Friends of the Crafts in Seattle; as well as the World Craft Council in New York City. In 1950, she was the leader in establishing the long-lived Northwest Crafts Exhibition held at the University of Washington. In 1954, as a member of Aileen Vanderbilt Webb's American Craftsmen's Educational Council, Penington was involved in a conference at The Art Institute of Chicago called together for the purpose of encouraging the regular exhibition of handcrafts in the nation's art museums. In 1962, she was largely responsible for the inclusion of an exhibition of work by Northwest craftsmen in Seattle's Century-21 Exposition. In recognition of her long years of service to the American Craft Council, Penington was named Trustee Emeritus and Fellow in the seventies.

Much about Penington marks her as "Northwestern." She loves the land and has never thought of leaving it. She has been moved by Northwest Coast Indian art and Oriental art, both part of the Northwest heritage. She has used Northwest found objects such as unpolished beach pebbles and agates in her art. She has fought long and hard for the good of Northwest institutions and artists. But her philosophy and her art are far from regional. She has been inspired by many cultures, archaic and contemporary, and her approach to art is universal.

Notes

All passages in quotation marks are from the interview with Ruth Penington unless otherwise indicated.

1. Seattle Public School Archives.
2. Lawrence W. Chisolm, *Fenollosa: The Far East and American Culture* (New Haven: Yale University Press, 1963), p. 194.
3. *Ibid.*, p. 205.
4. *Ibid.*, p. 9.
5. *Ibid.*, p. 4.
6. *Ibid.*, p. 206.
7. Arthur Wesley Dow, *Composition* 1899 (New York: Doubleday, Doran, 1929).
8. *Ibid.*, p. 59. Re: *Notan.* "Dark-and-light has not been considered in school curricula, except in its limited application to representation. The study of 'light and shade' has for its aim, not the creation of a beautiful idea in terms of contrasting masses of light and dark but merely the accurate rendering of certain facts of nature—hence is a scientific rather than an artistic exercise."
9. Walter F. Issacs, "Dow and the Modern Painters" (M.S., University of Washington, School of Art Library, n.d.), p. 4.
10. Isaacs to Penington, author's possession.

*Reprinted from Archives of American Art Journal, vol. 23, no. 2, 1983 with permission.*

*LaMar Harrington, formerly director of the Henry Gallery of the University of Washington, interviewed Ruth Penington in Feb., 1983 for the Archives' Northwest Oral History Project.*

*Hair Pin,* sterling silver, gold, Mexican opals, garnet and jade, 1962. Photo courtesy: University of Washington

# Casting Investment
## Materials and Applications

*by Richard D. Austin*

The investment casting process enjoys wide popularity in the production of commercial and one-of-a-kind art metal objects. However, production practice varies widely. At one extreme, design renderings are turned over to a production shop; at the other, the complete production process is carried out in the artist's own studio. In either case, a clear understanding of the materials and processes will help insure optimum results. There are a wide range of technical considerations involved in the investment casting process. This paper will focus on various aspects of investment application, beginning with a discussion of investment materials. This will be followed by specific application techniques and some trouble-shooting suggestions.

The two most common classes of casting investment are based on different chemical systems: *Calcium Sulphate* and *Ammonium Phospate/Magnesium Oxide*. The majority of commercial jewelry castings are made with calcium sulphate-based systems. They provide a good balance of economy, workability and physical properties. This article will be limited to calcium sulphate-based systems. The information presented *should not* be applied to other investment systems.

The ingredients used in an investment formulation establish its basic properties. The calcium sulphate jewelry investments are composed primarily of:

**Gypsum**—provides a structural base for the investment by the formation of a solid during the reaction between water and the gypsum powder.

**Quartz**—powered quartz (silica) provides reinforcement for the investment material.

**Cristobalite**—a form of silica added to adjust the thermal expansion properties of the investment.

In addition, other materials may be added in small amounts:

**Wetting Agents**—improve flow and insure intimate contact between the investment and the model.

**Defoaming Agents**—minimize the development of bubbles in the mix.

**Reducing Agents**—added to reduce surface oxidation on castings.

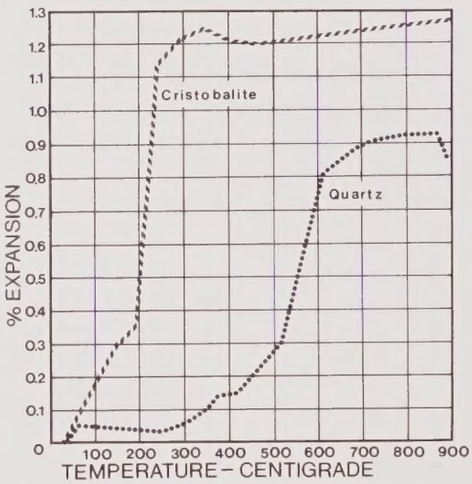
**Fibers**—improve structural properties.

Each of these materials will be considered in more detail. When heated to about 375°F/ 190°C, hydrated calcium sulphate ($CaSo_4 \cdot 2H_2O$) dehydrates to form the hemihydrate ($2CaSO_4 \cdot H_2O$). The hemihydrate is referred to as plaster of Paris or gypsum. This is a reversible reaction. When mixed with water, the hemihydrate reverts back to its original composition. During this reaction a mass of interlocking crystals is formed. On a chemical basis, about 18% water (by weight) would be needed to complete the reaction. However, excess water is added to prevent cracking and to insure that the reaction proceeds to completion. The excess water is evaporated during the burnout. Two factors strongly influence the rate of the reaction between the water and gypsum: *proportions of water* and *temperature*.

Manufacturers generally recommend that variation in the amount of water be limited to ± 5%. Less water will shorten the setting time and more water will extend it. The ± 5% change in water content will typically change the setting time by ± 30 to 45 seconds. Increasing the water content will also cause a thinner mix.

Increasing temperature can significantly shorten investment setting time. Hold the shop and water temperature constant. If you experience seasonal temperature variations in your studio, it may be necessary to adjust your investment cycle.

Other variables also influence the rate of reaction. A key factor is the amount of moisture absorbed by the investment during storage (partial rehydration). An obvious source is the moisture in the air. If the investment is stored in an open container, it will react with water in the air and deteriorate. This can cause several problems. In the worst case the investment will harden and form lumps. However, a number of more subtle changes occur before the investment solidifies. The primary concern is the change in working time of the investment. Moisture absorption will increase investment work time and decrease final strength.




**1** A comparison of the thermal expansion characteristics of the two investments clearly shows the influence of cristobalite as an investment additive. Data courtesy of Kerr Manufacturing Company

Two forms of silica are used in many contemporary investments. A number of minerals exist with a common chemical structure but they exist in two or more physical forms. This characteristic is known as polymorphism. For example, carbon can exist as graphite or diamond. There are several polymorphous forms of silica. Two of these may be used in investment materials. The first is ordinary quartz and the second is cristobalite. Both have the same chemical form, $SiO_2$, but they have dramatically different physical properties. The specific property of interest is thermal expansion. By using a proper proportion of the two forms of silica, it is possible to tailor the thermal expansion properties of the investment.

Figure 1 illustrates the thermal expansion properties of two different investments. One is based entirely on quartz (80%) and calcium sulphate (20%). The other is a mixture of quartz, calcium sulphate and cristobalite. The chart indicates that the cristobalite-based investment will expand about 1.2% as it is heated from room temperature to 572°F/300°C. In the same range, the quartz investment will expand approximately 0.05%. You will notice that the expansion curve of the cristobalite investment has a very sharp break. This corresponds to the silica inversion point at 450°F/232°C. At about 572°F/300°C the investment stops expanding to any significant degree. This sudden change is expansion properties causes cracking if the investment is cooled below the inversion point.

Typical alloys of gold, copper and silver all contract roughly the same amount as the investment when cooling from solidification to room temperature. This means that the investment expands enough to compensate for the contraction of the metal during cooling. Some literature suggests the use of compensation for contraction. In many cases, the descriptions deal with materials that did not incorporate cristobalite. Modern cristobalite investments need very little or no compensation for expansion. Figures 2 and 3 will help put this in perspective. The ring model and the test bars were fabricated from acrylic plastic. This allowed precise measurement. Both parts were invested, cast and remeasured. The photographs and subsequent measurement show that very little contraction occurred. The test bars contracted 0.71% and 0.86%. After sanding (400 grit) and polishing, the ring was essentially the same size as the model.

Many apparent cases of shrinkage are actually caused by poor measurement. Most waxes are flexible. A ring model may stretch as much as a size during measurement, and it's easy to build a wax bezel with a snap fit. The cast metal is not flexible, and what appears to be a case of shrinkage is simply poor measurement. Note that masters for wax injection do require compensation due to wax shrinkage during the injection process.

The physical strength of the investment is obviously important. During solidification an interlocking matrix of crystals forms around the filler material. The final physical strength of the investment is affected by the proportion of ingredients, storage conditions and the method of mixing the investment. The physical strength of the investment may be significantly decreased by improper han-

dling. The importance of physical strength may not be obvious. There is a relatively wide margin for safety in the process. Cases of catastrophic failure are rare. However, more subtle factors may be at work. Diminished strength of the investment may cause decreased quality of the surface as the material spalls or is eroded during the metal fill. Any loose material ends up somewhere in the casting. Poor strength can also generate fins or webs on the casting. The fact that the investment survives the casting process does not mean that it developed its full strength or was properly applied.

A study of the investment application process immediately discloses two basic problems. First, the literature seems to be inconsistent. Second, actual shop practice varies widely. Many casting operations produce excellent results with procedures at variance with the manufacturer's directions. The principle problem with the literature is straightforward. It accumulated over a period of years and materials have changed. Almost invariably, no reference is made to specific investment material. Is it calcium sulphate based or phosphate based? Does it contain cristobalite? Even the brand is seldom mentioned. This means that the literature is filled with references to differnt materials with different working properties. It should come as no surprise that any specific recommendations are difficult to apply.

Variations in contemporary practice can be understood in terms of specific applications. The investment process is flexible. Within certain parameters you can modify the process to fit your own shop situation. The following information will allow you to tailor your shop procedures to insure consistent results in your own studio.

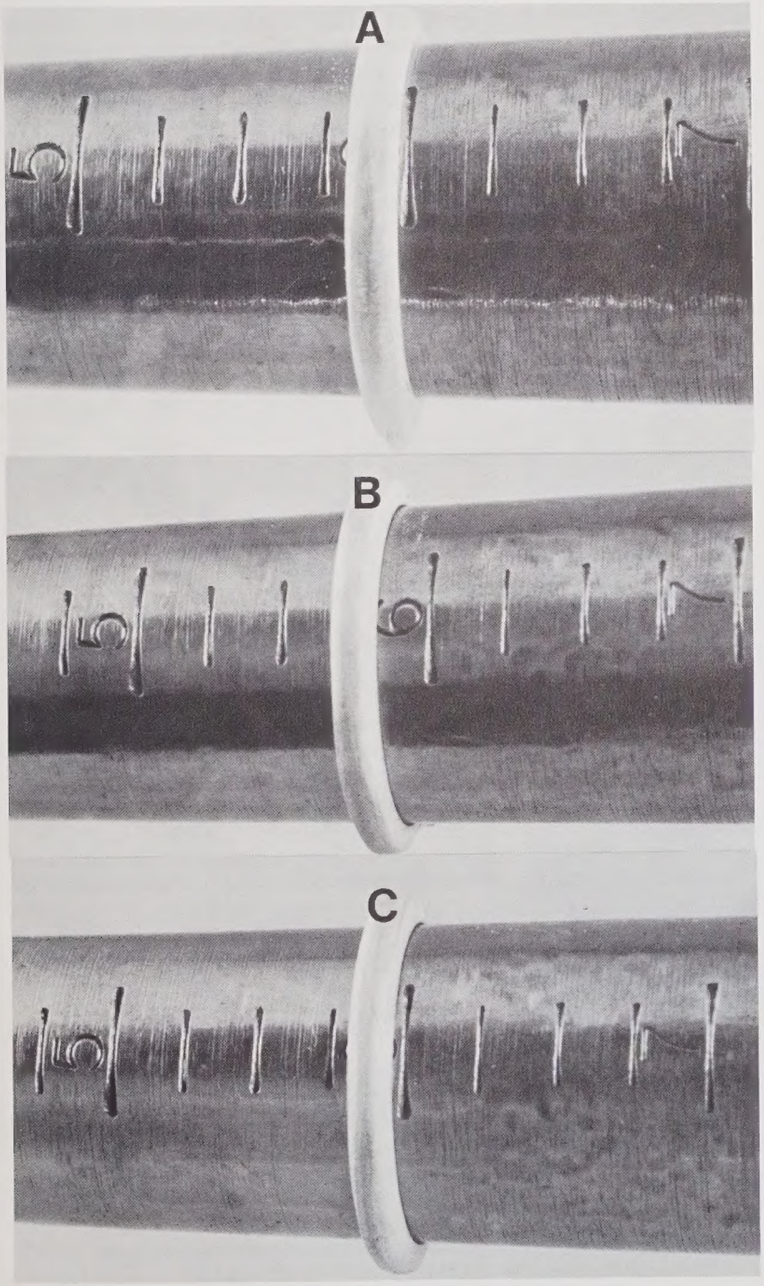
Two basic system properties must be considered: ***Viscosity*** **and** ***Work Time.*** The viscosity of the system is the physical property which changes most dramatically during the investment process. Viscosity relates to the flow properties of a slurry or solution. Honey is more viscous than water. This property of the system is important when suspended solids are present.

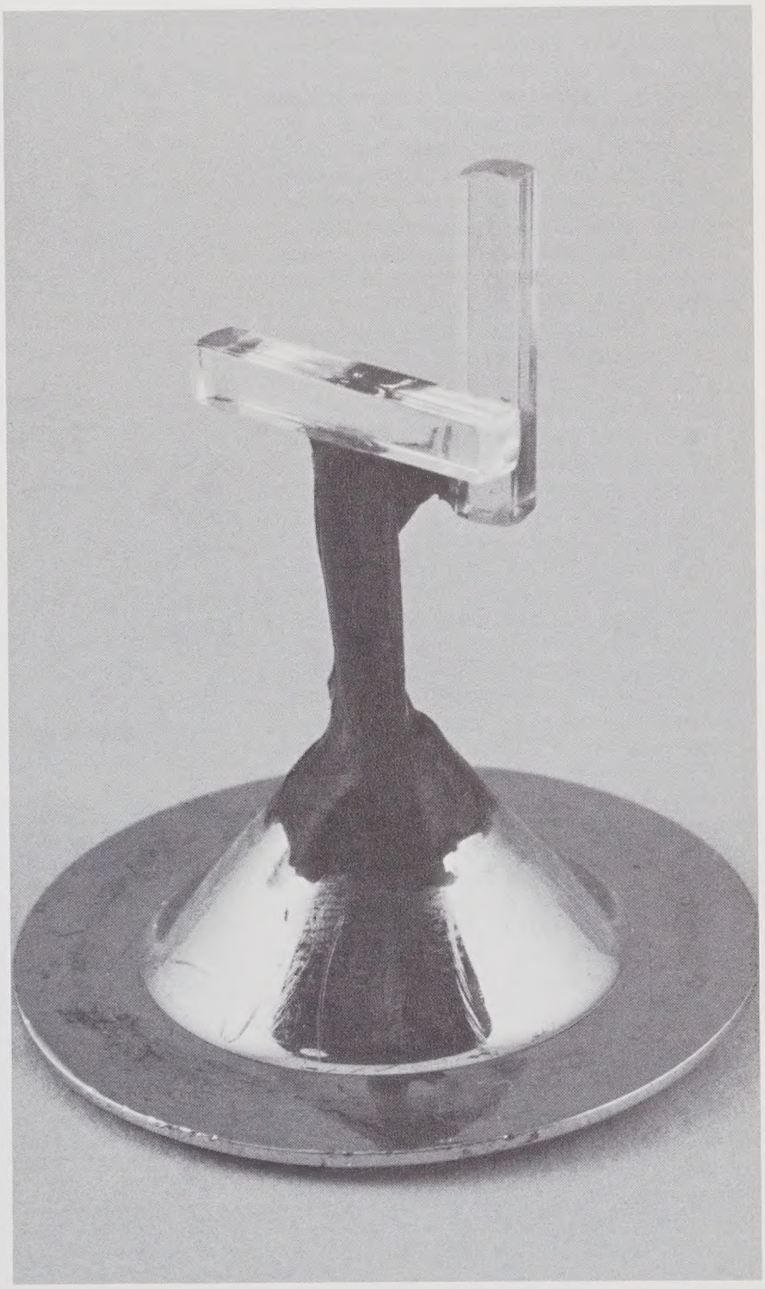
Particulate matter will settle quickly from a low-viscosity system and more slowly from a high-viscosity system. The formulation of the investment itself is influenced by these characteristics. The investment must be thin enough to flow into every detail of the master model. On the other hand, it must be thick enough to suspend the particulate fillers in the system. Settling of the suspended solids is one of the key causes of casting defects.

The viscosity of the investment mix changes almost constantly during the time between mixing and setting. If you measure this viscosity change, the requirements of the investment process become clearer. The top portion of Figure 4 illustrates the viscosity properties of an investment mix. The system starts out with a low viscosity, which increases dramatically at the setting time. The rapid rise in viscosity is a very significant characteristic. It establishes the amount of time available to complete the investment process. This is known as the work time.

The moment that the investment and the water are combined, a chemical reaction begins. This reaction continues for an hour or more after the solidification of the investment. Many of the changes (such as viscosity) can only be measured under laboratory conditions. However, one characteristic of the investment mix that is easy to observe is called the "gloss off." In

**2** The three segments of the photograph provide a practical demonstration of typical casting shrinkage. A) The original model B) Shank as cast C) Final size after buffing
**3** If you wish to measure the dimensional properties of your system more precisely, test bars can be used



essence, the gloss off is the transition from a slurry to a semi-solid.

I would recommend that you observe this phenomenon in your own studio. Following the manufacturer's instructions, prepare a small batch of investment and pour it into an open container. Place the container under a bright light. Time the mix from the moment the water and investment are combined (the investment is added to the water). When the materals are mixed, they have a wet, glossy appearance. After 9 to 13 minutes you will see a change. In less than a minute the appearance will change from wet and glossy to flat and dull. The investment has lost its gloss. Note the time you can first observe this change. This is called the gloss-off time and is very important in developing an investing cycle. In Figure 4 you will note that gloss-off corresponds to the sudden viscosity increase. Obviously the investing process must be completed before gloss off begins. All handling of the investment must be completed about 1½ minutes before gloss off. The period of 1½ minutes before gloss off is called the setting time. The beginning of the setting time is called the work time. Work time is the amount of time available for processing.

With this information, a specific investing cycle can be established. Several elements must be considered. First, the chemical reaction between the water and calcium sulphate is influenced by mixing. The optimum properties of the investment are developed when mixing is continued for at least 3 minutes. The second element relates to the nature of the slurry, a combination of water and solids. If the investment is poured too soon the solids will settle out. When this occurs serious surface defects will be encountered. The optimum properties will be achieved when the material is thoroughly mixed and the pouring of the investment is done as close to the gloss off time as practical.

It should be noted that the gloss off time in investments with other chemical bases (such as phosphate investment) are more difficult to measure. In these cases you must rely on the manufacturer's directions. Other investment systems may also be more sensitive to ambient conditions and/or exposure to moisture in the air. Calcium sulphate investment is more forgiving than most other available materials.

Four key operations must be accomplished during the investment process and they must be integrated into an appropriate time schedule. They are: *Mixing, Initial Vacuum, Pouring, Second Vacuum.*

**Mixing.** A minimum mixing time of 3 minutes is required to develop the optimum physical properties of the investment. Shorter times may cause decreases in physical strength and attendant surface defects, break-out or webbing (see section on defects at end of article). Mixing may be performed with a spatulator, commercial mixer or by hand. An ordinary kitchen whisk works well for hand mixing.

**Initial Vacuum.** Although spatulation and vibration may be used to replace the vacuum, the vacuum cycle is preferred. Depending on the size and capacity of your equipment, the vacuum cycle requires about 60 seconds. Roughly 45 to 50 seconds are required to fully evacuate the chamber. At this point the investment will rise significantly. About 4 to 5 seconds after the rise, the investment will collapse and the character of the bubbling will change. About 10 additional seconds of vacuuming should be applied. Over-vacuuming may cause very small spherical nodules to form on the casting. No additional benefit is achieved by continuing to vacuum more than 10 seconds after the collapse.

**Pouring.** Pouring a group of flasks usually requires about 60 seconds. Some shops pour in two steps. First a partial fill, and, second, a top off after vacuuming. This allows the investment to rise in the flask without overflowing. In my experience, topping off is probably not the best procedure. It extends the cycle and sometimes comes too late. The head space at the end of the flask may not be sufficient for investment rise, even when the investment barely covers the model. The use of a rubber or masking tape collar is preferred.

**Second Vacuum.** The second vacuuming step requires an additional 60 seconds. You will note that the rise of the investment on the second vacuum cycle will be much less than the rise during the first vacuuming.

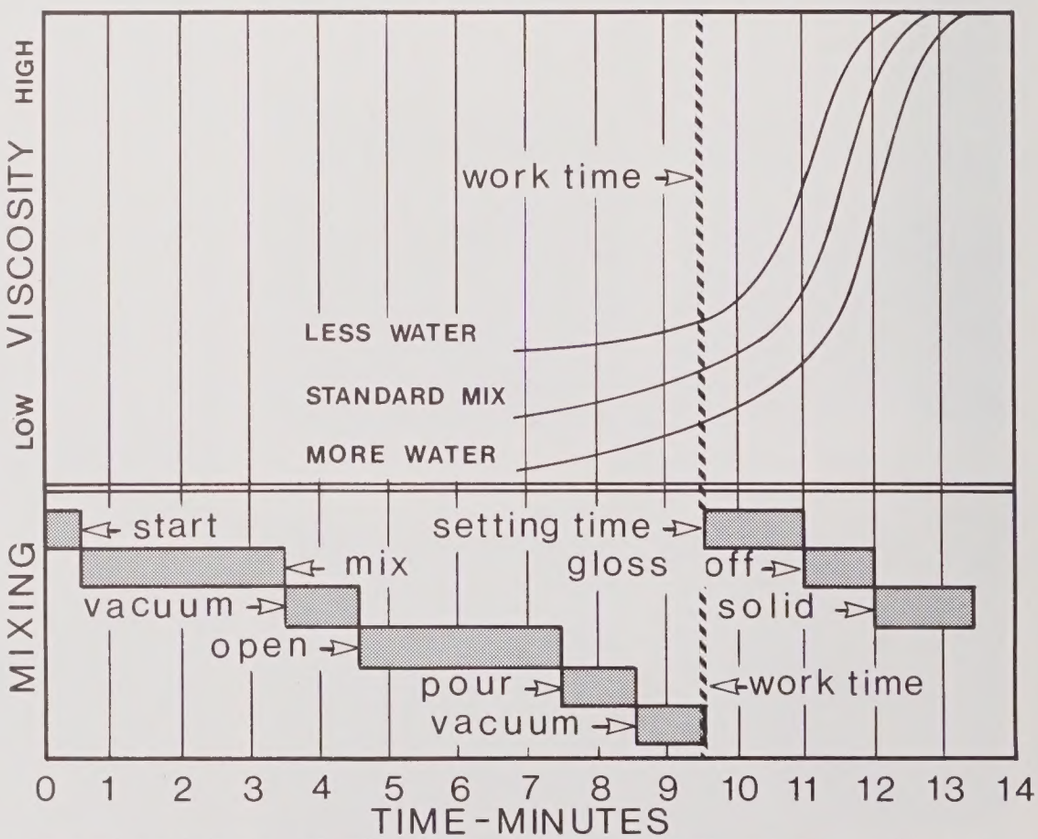
If you add up the times involved, you will find that some excess time is available.

| | |
|---|---|
| Mixing | 3 minutes |
| Initial Vacuum | 1 minute |
| Pouring | 1 minute |
| Second Vacuum | 1 minute |
| Total time | 6 minutes |

Since a typical work time is in the range of 9 minutes there are several uses for this extra time. You may set the investment aside during this period. If you allow the investment to stand it will be necessary to mix it briefly before pouring since the ingredients will tend to separate. Alternately, you may continue to mix the investment until you have consumed the available time. In the case of power mixing in industrial processes, this is the common procedure. Extended mixing times (within the work time) do not materially affect investment characteristics. In rare cases, it may still be useful to paint the investment onto the surface of the model. This should only be considered when there are very deep, sharp recesses in the surface texture or when no vacuum is available. Some literature suggests that the model should be painted with investment (sometimes thinned investment) and then sprinkled with dry investment powder before the procedure continues. There is little reason to use this technique with contemporary materials and processes.

The extra time allows for other adjustments to the cycle. For example, the investment can be mixed with heated water to shorten the work time in high-volume production. Other modifications can also be made if they are applied consistently and if they do not interfere with the basic working properties of the materials. By applying the gloss off time to your own requirements an individualized investment cycle can be developed.

The investment process cannot be treated as an independent operation. The design of the model, spruing, pre-treatment of the model surface, post-treatment after setting and burnout may have a dramatic influence on the result. Some other specifics are important. Surfactants or wetting agents improve the contact between the investment and the waxy surface. Commercial materials are available in two basic types. Those which are formulated for use with vacuum systems and those for use with non-vacuum systems. There is another factor which is beginning to influence surfactant application. Many casters attempt to improve their results by adding additional wetting agents to the investment. A combination of too many wetting agents will actually be less effective. As time goes on it is likely that there will be more wetting agents incorpo-




**4** A comparison of the investment viscosity and the mixing cycle illustrates how the system characteristics and its application are related

rated in the investment material and less emphasis on treating the model. If you wish to add surfactants to the investment, experiment carefully. Another factor may cause problems. Waxes cast in silicone rubber molds are very hydrophobic and are more subject to defects caused by poor wetting.

The reaction between the gypsum and water continues for an extended period of time after setting. During this period the investment continues to cure and gain strength. Introduction of the flask into the furnace stops the reaction. If heating is started too soon it will result in a significantly weaker mold. Small flasks should cure for at least 2 hours and a cure time of 4 to 6 hours should be used for larger flasks. After the reaction is complete, any excess moisture will evaporate. There is no inherent problem with room-temperature storage of the flask for an extended period of time. However, the flask should be remoistened for 1 to 2 minutes before burnout. The sprue former should be removed prior to rewetting so that the water will flush away any particles of investment that break loose when the sprue former is removed.

The basic objective of the burnout cycle is to remove the model from the cavity and then eliminate any carbon residue from the pores of the investment. The second objective is to bring the flask to temperature without undue stress. This means a slow temperature rise. Since the investment is an insulating material, the rate of rise must be controlled. One problem with the fiber insulated furnaces is the fact that they have a very high rate of temperature rise. They must be monitored carefully to avoid cracking the investment. The calcium sulphate begins to break down at about 1350°F/730°C. This breakdown may degrade the surface of the mold cavity and/or release decomposition products. These products contain sulfur, which reacts with the alloys present.

If a brief pickling does not remove the discoloration, acid treatment or abrasion may be required. Since the torch flame may play into the sprue opening, this effect is sometimes localized in the sprues or sections of the work directly adjacent to the sprues.

Most metalworkers recognize the inherent dangers of molten metal and a spinning casting arm. However, there are some less obvious dangers in the process. A 10-inch bell jar has a surface area of approximately 1,000 square inches. This means that when it is evacuated there is a total pressure of over 14,000 pounds on its surface. An implosion caused by a defective or damaged bell jar can be very dangerous. The typical investment materials contain as much as 80% silica. Long-term inhalation of the dust can lead to a lung disease known as silicosis. Good hygiene is very important. Keep your work area clean. If you are working in a casting shop or involved with handling of bulk investment you should wear a suitable dust mask.

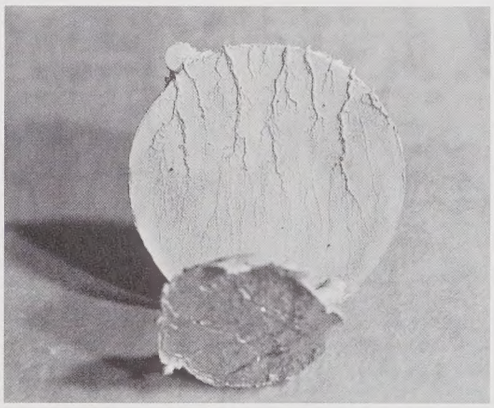
In my opinion, asbestos is the most serious health threat in the casting operation. Most of the references to asbestos for flask or crucible liners were written before this hazard was fully understood. *I would strongly recommend that you do not use any asbestos in your shop.* The use of asbestos as a flask liner was often associated with early dental investments, which had a high setting expansion. No liner is necessary for most contemporary jewelry investment. If you feel that a liner is necessary, Kerr Manufacturing and others offer asbestos substitutes. The use of asbestos crucible liners was recommended to promote metal purity and preserve the crucible. Proper fluxing of the crucible is sufficient. However, you may experience flux buildup to the point where flux is carried into the mold cavity. This generally causes small, bright crystalline porosity on the casting surface. Proper sprue arrangement will generally minimize or eliminate this problem.

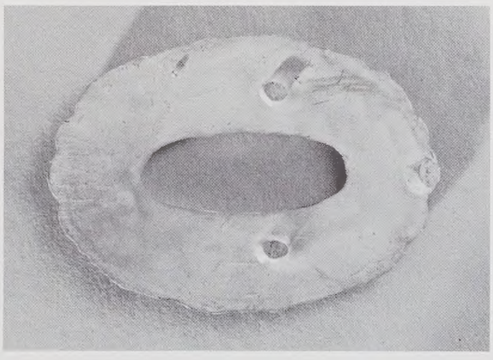
Before presenting specific troubleshooting suggestions, I will list some fundamental rules that you should always follow:

When in doubt, read and follow directions.
If you have no better information, follow the manufacturer's instructions faithfully.
Weigh and measure the ingredients carefully.
Develop an investing cycle which takes advantage of the full working time of the investment.
No matter what cycle or process you select, be consistent.

Many casting defects may be caused by more than one problem. The preparation of the model, the use and application of the investment, burnout, metal alloy and melting all can have an impact on quality. However, to the extent that the investment relates to the visible defects in the casting the following should be considered:

**Channeling.** The channeling (watermarks) defect, illustrated in Figure 5, can be caused by too much water in the investment, pouring too early in the investment cycle or excess vibration during handling. Pattern size, shape and orientation in the flask may also contribute.





**5** This extreme example of channeling was induced by a combination of excess water, early pouring and vibration **6** This is a production casting of marginal quality. Note the subtle channeling and spherical nodules

**Fins.** Finning or webbing can be caused by several factors. Improper investment proportions, rapid temperature rise in the burnout oven and/or cycling the mold below the cristobalite inversion point all tend to cause webbing. Placing the flask in the oven too soon or abusive handling may also cause fins.

**Gross Nodules.** Large, irregularly shaped nodules on the casting usually means you have waited too long in the investment cycle to pour the material. The investment viscosity is so high that significant amounts of air are trapped, forming large cavities.

**Spherical Nodules.** The majority of spherical nodules are caused by incomplete air removal from the investment (see Figure 6). The solution is proper vacuuming and/or spatulation and vibration during the investment process. Very small nodules may occur if the material is vacuumed for too long. Failure to use an appropriate wetting agent may also be the problem. If your equipment lacks a reliable vacuum gauge, you may check the vacuum level by placing a tumbler of room temperature water in the chamber. It should come to a boil about 1 to 1½ minutes after the vacuum pump is started.

**Poor Surface Texture.** Poor surface texture can be caused by a wide range of factors. The excessive use of wetting agents (they should be allowed to dry), improper burnout cycle, excessive water in the investment or reactions between the model material and the investment may degrade the surface. This last problem usually occurs with certain kinds of plastics. Natural organic materials cause poor surface texture if they absorb water. Improper model design, sprueing, short cure time and rapid temperature rise all may cause surface defects.

**Surface Discoloration.** Overheating the investment will free sulfur compounds which react with the metal surface and may be very difficult to remove. Overheating also contributes to poor texture.

The quality of an investment casting is influenced by every step, from the original design sketch to final buffing. In the case of production items cast from injected waxes, a modest level of reject castings is not a serious problem. However, failures are extremely frustrating if you produce one-of-a-kind objects. In this case, all of the labor invested in model construction is lost if a casting fails. A clear understanding of investment properties and application can significantly decrease the risk of casting failure. Extra care will produce results that more than justify the extra effort.

**Note:** I would like to thank the Kerr Manufacturing Company for the help and advice provided in the preparation of this article.

Richard D. Austin is a chemical engineer by training and has been a consultant to the jewelry manufacturing industry. He is also a technical writer and a practicing goldsmith.

# REVIEWS

**Arline Fisch**
Helen Drutt Gallery, Philadelphia, PA
June 8–July 12, 1985
by Sharon Church

There is a sense of drama here. The gallery is dark, the room recedes, the cases glow. The work is colorful, large, suggestive of the body form and poised for the animation that adornment will bring. This is Arline Fisch's knitted-wire jewelry at the Helen Drutt Gallery, a group of work that is mature and highly resolved.

Though these knitted metal pieces refer to clothing, they extend beyond the process itself. The artist's knowledge of fiber structure and fabric has played an important role in the development of her jewelry forms. A neckpiece can be large and mantlelike, regal in domination of the upper torso; a bracelet can hug the body like a sock; and though the material is metal, it is also lacelike, flowing, supple and pliable. In definition, each piece seems to fall somewhere between jewelry and clothing. It is ornament that pays homage to the body—light in weight, comfortable in fit, striking in color and form.

Fisch creates with wire a material that is at once metal and fabric. Using hand-knit, spool-knit or machine-knit techniques, the artist produces a woven metal cloth that she can treat almost like thin-gauge sheet. She pushes and pulls and coaxes the fabric into various forms, a kind of extended metalworking. And while these forms will maintain their newly acquired shape, they will also retain the softness and responsiveness of cloth.

The structure and stretch of the knitted wire gives the work remarkable qualities. There is rarely a need for mechanism. The ornaments—belts, hats, necklaces, bracelets—pull on, stretching slightly, then relaxing to conform to the body or returning to shape. Often, the orientation of the piece is determined by its placement on the human form. Further, the structure of the knitted wire allows the artist to play with color. Through the use of coated copper wire, Fisch has found a sympathetic palette in bright orange and red, rich purple and green. By knitting two different color wires together as one strand, she creates a shimmering, iridescent effect. The rhythmic, repetitive nature of the knit pattern contributes to stripes and overlays. Close inspection reveals the artist's pleasure in manipulating these subtle rhythms through placement and detail.

Fisch uses one of three different knitting techniques in the production of each piece: hand, spool or machine. The choice of process contributes directly to the esthetics of the finished work. The machine-knit pieces seem to maintain greatest allegiance to a geometric configuration. Even though distorted through stretching and recombination, the rhythm and regularity of this material maintains predominance and lends overwhelming flavor to these single, strong pieces. In comparison, the hand-knit work is far more organic. Frothy and foamy, the irregularities contribute to a more lacelike feeling through softer, more plantlike forms. Spool knitting seems to provide the artist with regularity in the overall form, though inconsistencies from stitch to stitch give these pieces a singular life. The three spool-knit tubular necklaces are compelling in their simplicity. Silver and gold wires are knitted into hollow, transparent tubes that have an amazing strength in compression. The enlarged 18k section seems engorged with the richness of the material. In these neckpieces, aspects of machine- and hand-knit processes begin to converge. The simple tubes are obviously geometric in shape, yet they share in the organic quality of a Hawaiian floral lei.

The most recent work, and that pointing in new directions, evidences a pushing of the machine-knit fabric even further. Fisch's manipulation of the material off the machine is opening up new possibilities—Elizabethan ruffs and snakelike tendrils anticipate a more baroque feeling. Recognizing that this body of knitwear is but one aspect of Arline Fisch's total oeuvre, one is struck with the continued productive output of this artist in her ongoing search for innovative process and personal growth.

**Below left:** *Collar HKC 29/1985,* hand-knit, fine silver, 18k flat wire, accents and clasp, 14″ d. × 5″ w. **Below right:** *Large Collar MKC42/1985,* machine-knit coated copper (gold color), fine silver, 18″ d. × 7½″ w. band. Photos: Wm. Gullette

**Carolyn Morris Bach**
Swan Galleries, Chestnut Hill, PA
May 4–31, 1985
Susan Cummins Gallery, Mill Valley, CA
September 16–October 21, 1985
by Jan Yager

There is something about metal that can really slow you down. It makes a casual, spontaneous approach just about impossible . . . unless you happen to be Carolyn Morris Bach. I am beginning to believe that she has found some metal the rest of us can't find, with a hardness on the Mohs' scale of paper pulp or clay. Her work consistently appears fresh, intuitive and malleable.

If you are familiar with Bach's work, it is likely to be her cosmetic brushes, they are beautiful, functional and irresistably appealing. What I know her best for is a fearless and prolific search for new forms, new challenges and unpredictable combinations. She may delve into the possibilities of large copper baskets casually formed and lead soldered, or gold and silver enro containers or brushes of all manner. Next she will be making tiny little bird nests or powerful fetishes, then long rambling necklaces sprinkled with nonmetal items. All breathe a facile control of the metal in what she terms a "natural, pre-industrial look."

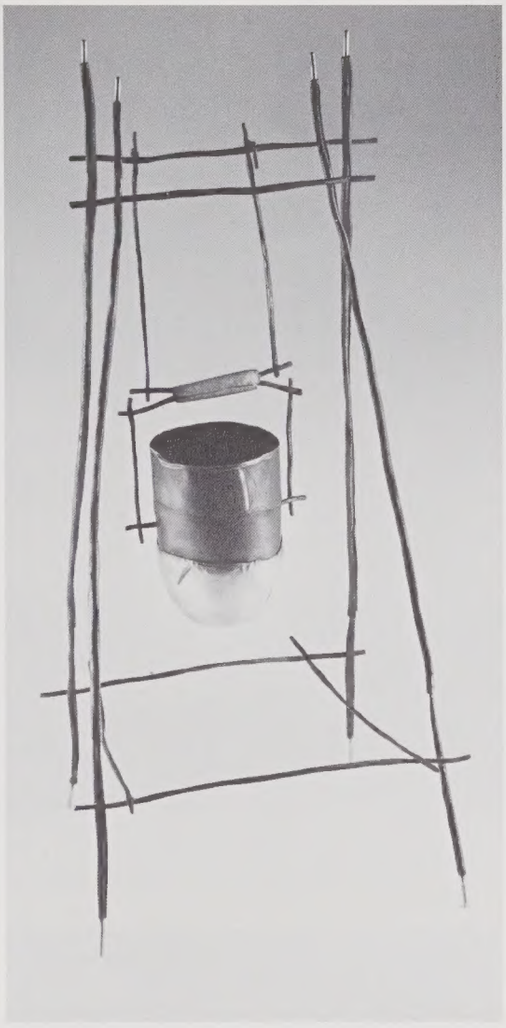
Bach's latest body of work is a case in point. There is a full range of work: earrings, brushes, beaded and fetish necklaces and, the latest, vessels on stands all with a compelling sense of magic and mystery. She seems to have wholly absorbed and synthesized the essence and imperfect beauty of the primitive cultures she so deftly draws inspiration from.

Her necklaces are a variety of tiny and big, skinny and fat beads ending in clusters of coral, antique amber or fetish dolls which are often skirted or wrapped. All have the subtle layering and rich surfaces that define her mark. Often the pieces have or refer to actual or ritual uses. Gathering, containing, rites of fire are all suggested by her new vessels, which are seemingly meant to hold things, but perhaps secretly or with reverence. They are hung or set on three- and four-legged stands, much like twigs lashed together for a campfire. Some imply stories of horses, or have faint traces of horses inlaid in the surfaces. On one piece a little beast is frozen in motion above slashes of lines joining a middle sash to the rest of the piece. Twiglike handles jut out the sides, allowing the piece to rest on its stand or tilt open on a table independently.

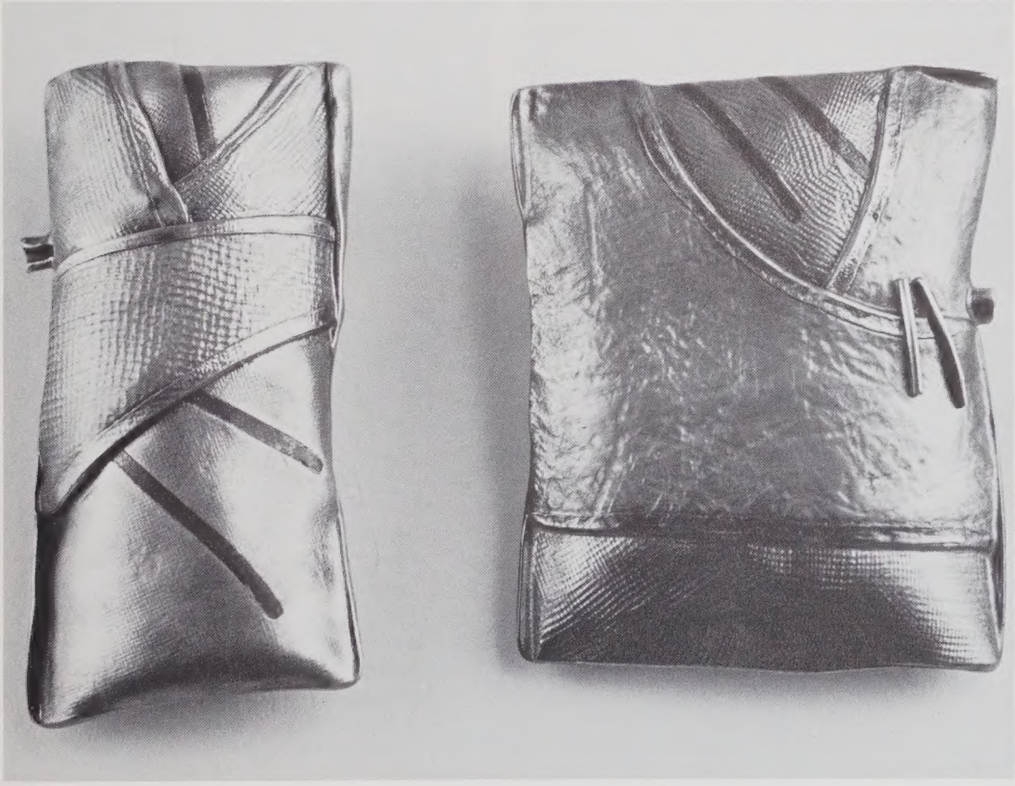
She enjoys ornamenting her ornaments. A basket may have a belt of tiny clay beads and slivers of metal, a fetish necklace may have its own necklace or at least earrings. One motion adds to another. A shape or line is inlaid then repeated with chasing and overlay, or may simply be outlined with a colored pencil. If a piece should bend in an unexpected way she may leave it, should it tear she may patch it as though it were a pair of jeans. There is no attempt to hide process, no apologies, no hesitation. What is revealed is an urgency to get ideas out fast and flowing, confident that the message is there, the right answer, the first time.

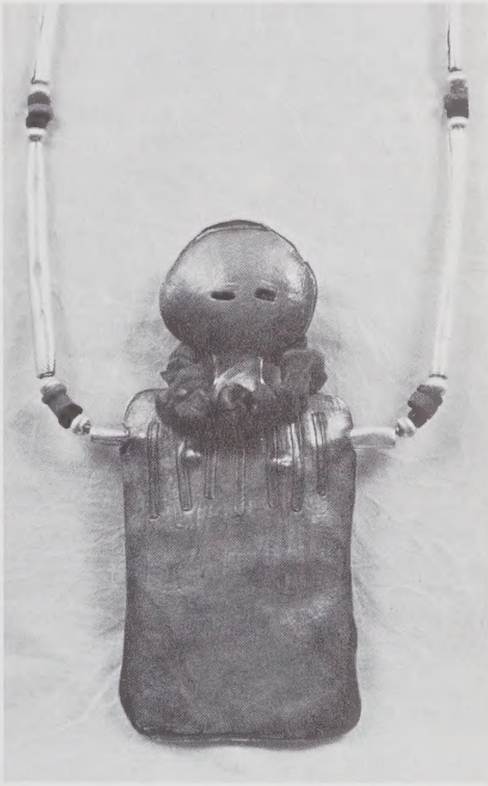
Bach speaks of nourishment from many sources, including American Indian, Eskimo and African works. It is an eclectic yet very selective grouping, leading to a personal and original style.

I am always on a search for artists who surpass the medium—the endless techniques and processes, the restraints of function, wearability, marketability, tradition. And when I catch myself hunting for that magic metal, I remind myself that what Carolyn Morris Bach really uses is an alchemy of intuition and the forge.



**Above:** *Vessel Form #5* with stand, fine silver, copper, 14 × 6 × 4″ (4 × 3″ basket). **Below left and center: Kimono Brooches,** fine silver, copper, 2 × 1″ and 2 × 2″. **Below right:** *Fetish Necklace,* fine silver with copper, carnelian and copper beads, 3½ × 1½″ (fetish). Photos: Dirk Bach





**Fifth Annual Selected University Metalsmiths**
Norman R. Eppink Art Gallery, Emporia State University, KS
April 1–19, 1985
by Marjorie K. Schick

Seldom do audiences outside the locale of the university get to see both the work of professor and student, which together illuminates the strengths of the teacher as educator and as artist and the imagination and skill of upcoming metalsmiths. This idea provided the inspiration for the "Fifth Annual Selected University Metalsmiths Exhibition." Following the precedent established by Gary Marsh, formerly teacher of Metals at ESU, this year's show featured the work of San Diego State University Professors Arline Fisch and Helen Shirk and their students, along with that of Associate Professor Marilyn Griewank da Silva and her students at Bowling Green State University in Ohio. The work of the faculty and that of the students was professional, inventive and varied. Yet the show was more than simply educational. The exhibition held the viewer's attention not only for the beauty and well-crafted nature of the work, but more importantly for the ideas and the individuality of the artists represented.

The show, consisting of 32 pieces, featured holloware, flatware, jewelry, and sculpture, done in materials ranging from silver and copper to anodized aluminum and titanium and combining plexiglass and Colorcore formica with various metals. There was also an obvious interest in heat-coloring metal and in chemical patination of metals. The variety of form and technique was dazzling. Each piece invited study and contemplation.

The works ranged from the elegant, hard-edged, angular *Conical Neckpiece* of silver and patinaed copper by Gina Westergard, SDSU, to the whimsical *Ritual Dance of the Great Potato God* by Lynn Johnson, BGSU. The latter, an assemblage of small figures holding chairs and a life-sized potato stuck with toothpicks, all painted an intense fuchsia and placed upon a boxlike base, painted aqua with freely sketched lines of hot pink and white, was a pleasant surprise in a metals show, not only because of its playful nature, but also because of its color and juxtaposition of images.

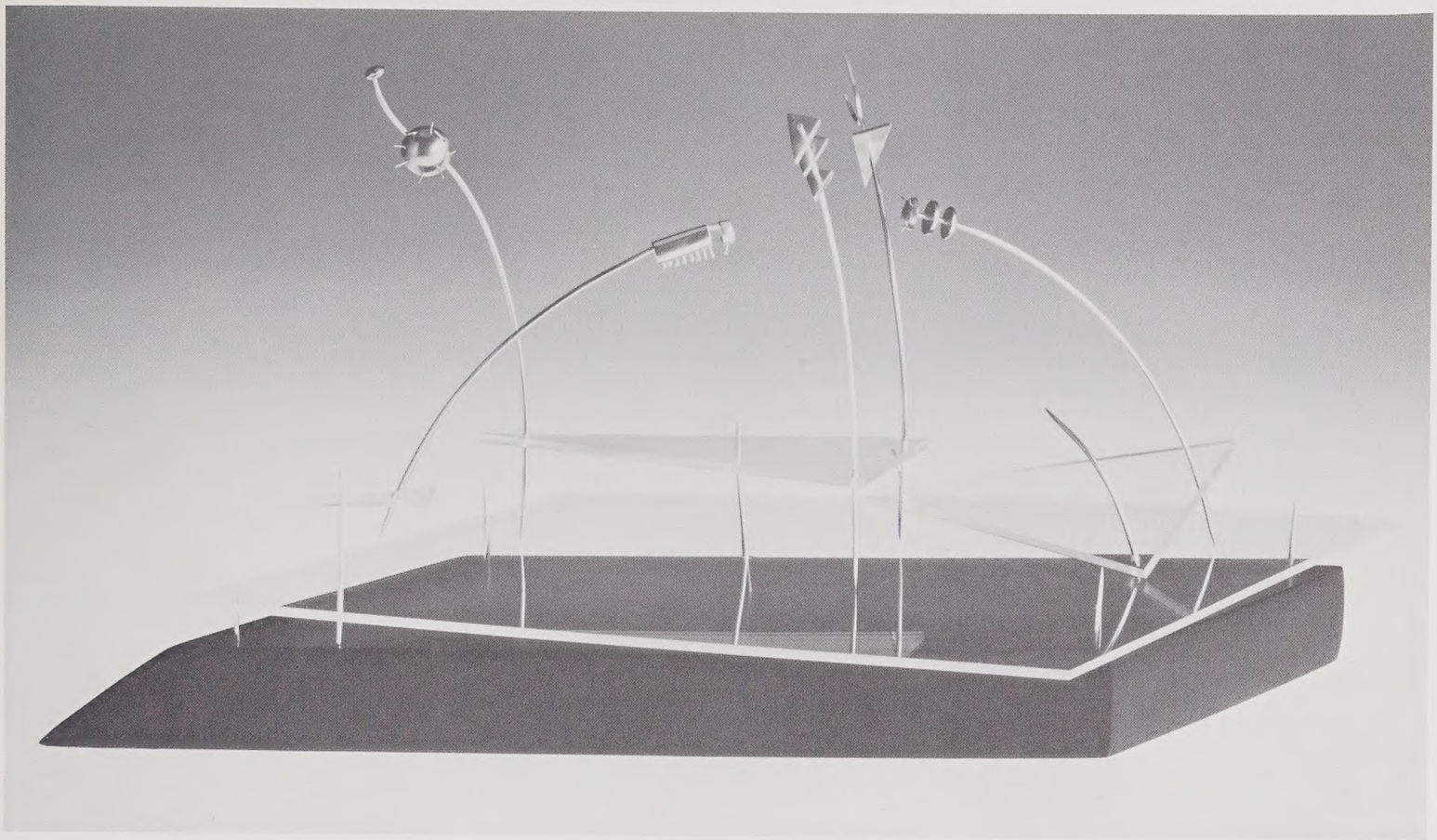
The faculty contribution to this exhibition was outstanding, both for the drama of the work as well as its sensitivity of form. Professor Arline Fisch, well-known for her success in employing textile techniques, offered a red, machine-knitted necklace with a violet knitted overlay, which was beautiful not only for its form but also for its color relationship. Her *Double Tube* bracelet, sculpted of ridges of wide and narrow bands of knitted red wire, seemed much grander in scale than its actual size. Professor Helen Shirk's work also had a presence that made the form seem monumental. In her *Vessel CVQ,* overlapping planes of patinated copper rose elegantly from a small base and thrust themselves into space. The colors and patterns achieved through patination were rich in their contrasts, and Shirk's understanding of form is unparalleled. *Object I,* a piece created of raised and fabricated copper, brass and sterling, by Professor Marilyn Griewank da Silva is so rich in details: notched edges, evenly spaced posts and a surprise of coiled red wires under an arched marriage of metals which forms the lid, that the viewer returns again and again to study it. The work, with its handsome proportion between the detailed lid and the fullness of the raised container, is also worth contemplation for its combination of colors, directional movement and contrast of detail played against large, smooth surfaces. The piece has a ritualistic quality, which is perhaps a reflection of Marilyn's recent stay in Korea as artist-in-residence at Kookmin University.

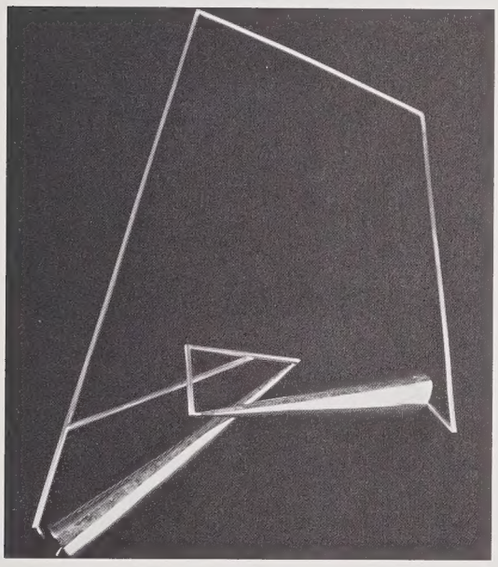
Inventiveness of form characterizes the entire show, but most notable was SDSU student Thomas Seabury Brown's *Cocktail Table for One*. The anodized aluminum cup and grid were balanced so precariously near the edge of the marbleized "tabletop" that they gave a sense of visual tension to a piece alive with contrasting surfaces and patterns. Kristin Diener of BGSU offered in *Winter Weeds: Five Hair/Sweater Pins and/or Tator Tot Spears* a series of stickpins growing out of a plexiglass and wood base that were as playful to look at as the name implied. SDSU's Donna Stoner had a unique idea for her *Participation Box/Neckpiece*. She grouped magnetized elements that could be changed and rearranged to suit the wearer's fancy. Even the box with a fabricated sculpture on the lid could become a base for the display of the necklace or could serve to store the necklace parts.

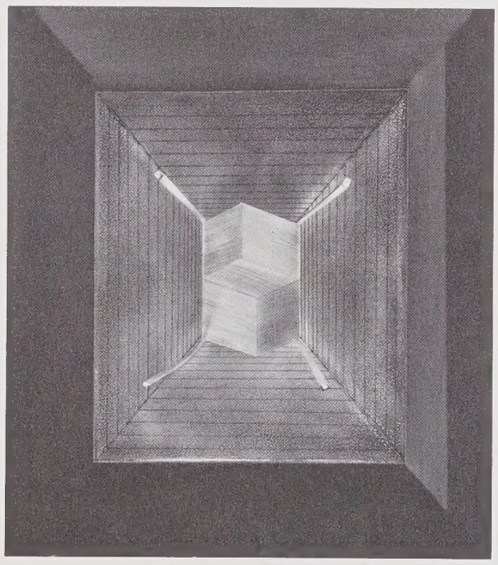
Strong contrasts were evident in the works of other artists. Isabell Hund of SDSU played taut, arched steel wires over colorful textured, anodized aluminum oval shapes in a series of three bracelets. BGSU student Durelle Pefferman gave copper a surprising softness in her *New Beginning*, a raised copper bowl beautiful in its play of a soft rolled edge against the crisp formed contours in the body of the piece. By concentrating on the malleability of metal, Pefferman was able to give the rolled metal edge the appearance of leather or a substance of similar softness. At the other extreme, subtle coloring and measured lines gave BGSU student Nam-Woo Cho's enameled wall plaque, *Changes,* a highly controlled appearance.

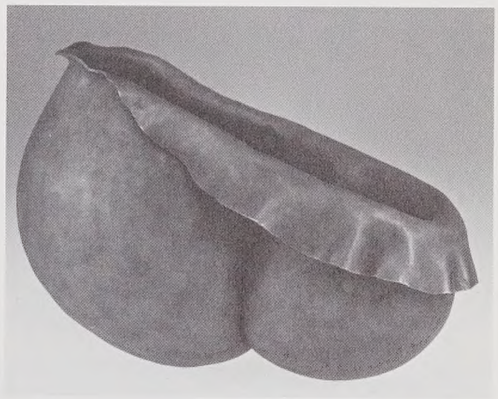
The show as a whole was very impressive. The technical ability demonstrated by these students was excellent, and, more importantly, their ideas, ranging from SDSU student Asako Fuller's *Epaulette Military Procession* of silver combined with multiple foot and boot images cut from Colorcore formica to the pert liveliness of BGSU student Anya Firszt's sterling *Cocoa Pot,* were varied and imaginative. In all it was a professional and stimulating exhibition, valuable because of the diversity of ideas presented as well as the high quality of the craftsmanship.

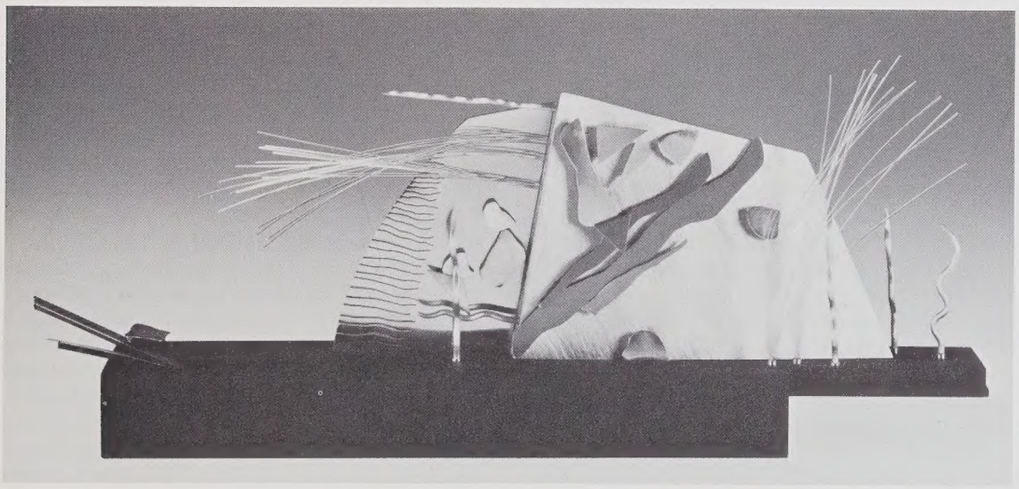
Not only should the teachers and students of the two schools represented be applauded for the skill and imagination shown by the work sent, Emporia State University should also be complimented for continuing to provide this opportunity for students and faculty from institutions across the country to exhibit together. The beneficiaries of an exhibition like this are not only the viewers but also the participants. I look forward to seeing next year's show.











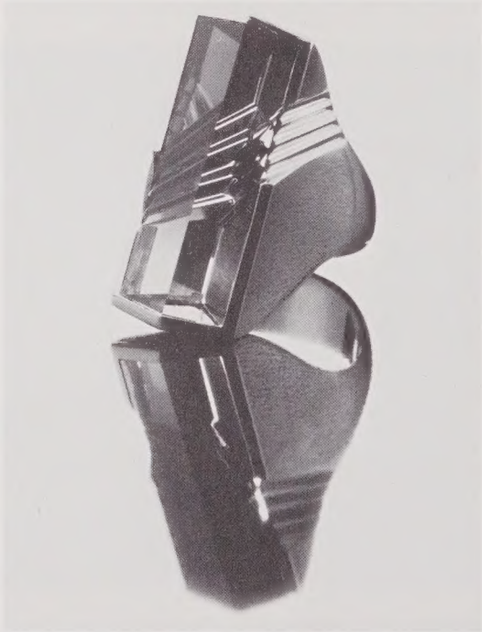
**Opposite page:** Thomas Seabury Brown, San Diego, *Cocktail Table for One,* aluminum, delrin, acrylic, paint; **Top:** Kristen Diener, Bowling Green, *Winter Weeds: Five Hair/Sweater Pins and/or Tater Tot Spears,* silver, brass, plexiglass, wood. **left:** Gina Westergard, San Diego, *Conical Neck Piece,* sterling silver, patinaed copper. **center:** Donna Stoner, San Diego, *Participation Box/ Neckpiece,* acrylic, nickel, steel, magnets. **right:** Durelle Pefferman, Bowling Green, *New Beginning/ Bowl,* copper. **Bottom:** Nam-Woo Cho, Bowling Green, *Changes,* enamel, copper, brass;

**Three German Jewelers**
Elaine Potter Gallery, San Francisco, CA
July 2–27, 1985
by Carrie Adell

Reviewers often make broad generalizations. My aim is to use as few second-hand references as possible in discussing the jewelry at The Elaine Potter Gallery in San Francisco. Once again, we must thank Ann Grundler for facilitating this exhibition, bringing to the United States the work of Wilhelm Buchert, Bernd Munsteiner and Klaus Ullrich.

Cultural prejudice (a form of pre-judging) is difficult to avoid. There is a temptation to compare the efforts of these three individuals on the basis of some common attributes: of origin, of content or imagery, of technique, of intention. Another approach might place the art works in a historical perspective, comparing them with work of another time or place. Does the experience of art (or other labeled esthetic event) need a historical perspective? Isn't the experiencing of an object *about* intrinsic qualities and not accumulated lore? I can experience the individual piece (its heft, texture, design) or I can experience accumulated lore about the piece (values, beliefs, myths, judgments). Better still, I can have both, provided I don't allow the "lore" to influence my own gut-level feelings.

The jewelry of Klaus Ullrich embodies the processes, both mental and physical, of its creation. Three chokers, among the rings, brooches, earrings and bracelets, were most appealing to me. In each choker I could follow (infer) Ullrich's problem-solving activity. Each of these chokers is composed of small geometric modules, repeated regularly their full length, each terminating in a clasp of the same apparent module, so well concealed, it was difficult to find which unit was the clasp. A link-on-link chain has each jump ring of 18k wire enclose a spindle shape of oxydized silver, like two coolie hats, point to point, and perpendicular to the jump ring's plane. The rings also join each other perpendicularly. The chain thus exhibits the spindle shape as a full circle from head on and as a very skinny H-shape from the edge, as well as all the variations in between when the wearer moves. A denser look is achieved in a choker of wedge-folded rectangular units of oxydized silver sheet. Each wedge points into the open end of the preceding wedge. The folded end is tipped on each corner by a tiny gold ball, restrained by each circle of flattened 18k wire attached to the flared end of the wedge. The resulting choker is supple and snakey, an almost elastic configuration. The story of Ullrich's concept and process is embodied within. Most of Ullrich's work communicates to me his awareness of structure, of motion, his processes of creation and fabrication. His visual statements are strong and confident. His forms are analytical yet playful, inventive in concept, crisp yet gentle in execution.

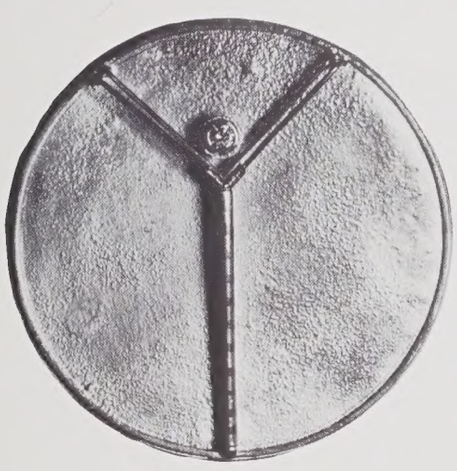


**Top:** Klaus Ullrich, *Choker,* 18k gold, silver, ⅝″ d. × 15″ l. Photo: S. Deveaux. **Above:** Bernd Munsteiner, *Ring,* 18k with inset of grooved section of platinum, tourmaline. **Above, right:** Wilhelm Buchert, *Brooch,* gold, platinum

Both Klaus Ullrich and Wilhelm Buchert employ geometric forms to express their ideas: Ullrich's are statements about articulation and movement, Buchert celebrates the relationship between linear and planar surfaces. Several of Buchert's necklaces were constructed with chains of burnished platinum wire in linked lengths, clad in shorter lengths of softly textured 22k gold tubing. The alternation of these metals creates an interrupted line of reflected lights and glints in the chain. In some the surface pattern of the pendant is itself made of a laminated sheet of alternating gold and platinum stripes, domed and sandblasted, and set as round cabochon beneath a sapphire cabochon. The center line of three parallel wires is composed of alternating bands of gold and platinum. These lines lead the eye downward from the point where the chain meets the drop, at a grouping of three diamonds. The triangular center diamond is an arrow directing the viewer to the pendant. Buchert's work is largely symmetrical, or almost so. The visual message is one of serenity, of calmness, of repose. There are no unresolved diagonals to leave the eye's mind incomplete, in a state of ten-

sion. Even Buchert's use of gemstones contributes to the sense of order. They are elements of the total design and not focal points per se.

In marked contrast to the sense of repose generated in viewing Buchert's work, I found the works of Bernd Munsteiner to be like tightly condensed packets of energy. Munsteiner is a gem cutter and goldsmith whose skills are mutually enhancing. His gems are not cut and polished in traditional cabochons or standard facets. They are individually sculptured to the fancy of the designer and integrated with the various metal environments. Especially in his rings, perhaps because of their compactness, Munsteiner achieves a wonderful integration of gemstone and metal. He cuts opposing, stepped, parallel grooves on facing surfaces of a tourmaline crystal and continues the grooves into the body of the ring, in a contrasting metal, platinum, inset in 18k gold. Transparent and polished surfaces are juxtaposed with opaque. Subtle transitions of color tones develop inside the gem and in the metals beneath and around it. The recurrence of the parallel step cuts the gem and metal of many of the jewels suggests



wrappings, or even restraints, visually imposed on Munsteiner's designs. These cuts occur on the transparent material: citrine, aquamarine, amethyst, indicating to me Munsteiner's (unconscious?) caution and restraint in handling such traditionally precious materials. It is in the jewels with "semiprecious" agates that he really lets go. A brooch, ring and two pairs of earrings incorporate carved and sandblasted agate as their major visual statement. The metal settings are reiterations of the natural and enhanced patterns in the agate. Working within these patterns, Munsteiner terraces into the agate, revealing the variations in hue and echoing in reverse the process of its generation. Through these pieces I got the sense of the human behind the objects, assessing, making decisions, transforming a concept into a visual and tactile experience.

I have attempted to bring the reader something of my experience of this exhibit. Ten other reviewers would give you 10 different viewpoints, equally valid. I know some things about art, and yet I also know what I like.

**Herman Hermsen**
V.O. Galerie, Washington, D.C.
June, 1985
by Gretchen Raber

At this show, Herman Hermsen, from the Netherlands, laid out the images of a jewelry philosophy. It was marvelous to behold stacks of brightly lacquered strips or wire shapes that folded and angled in complex variations. All are based on the geometry of circles and squares. The concept of measured divisions of circumferences used tangent lines to form bends and implied planes. Hermsen is very concerned with the development of concepts of simple form to create what he calls "High Expression." The resultant objects are also made for wearability in the manner which he as an industrial designer might view the human form. That is, if one were to see the body as a mannequin of simplified geometric volumes. Hermsen moves from this premise to contrast body form with the geometry of decoration. His work is constructivist in the sense that he seeks to integrate simple technological solutions with abstracted autonomous forms. His work falls into groups of logically, continuously metamorphosed perimeters. Whether in gold or aluminum, they retain the premise: all designs are minimalist.

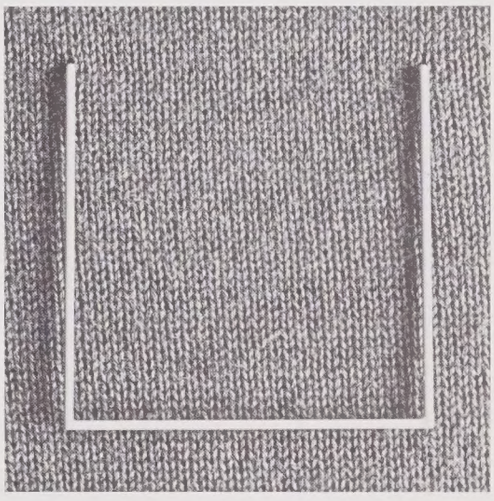
One particularly interesting group of brooches caught small amounts of fabric in the center bow of wire, just as camping tents hold a volume of fabric stretched inside the external frames.

Other series of neckpieces, bracelets, brooches and rings, all based on sections and planes of a circle, are elegant forms when seen as groups. It is then that the relationships of the variations are most evident. Primary colors accent the curved strips adding a playful and humorous quality.

Most provocative are Hermsen's headpieces. Essentially wire rectangles, they break stiffly across the ears and create a bar in front of the face. Herman demo-ed it for me. (Definitely, not for the meek.) In fact, those pieces and several others generated some fairly candid comments from Egon Kuhn, a reviewer in the 1984 catalogue, "Werk Herman Hermsen."

". . . (T)he problem of wearability arises . . . Indeed there are people on whom such a necklace looks harmonically. But on others it looks like an inflexible apparatus. Whoever tries to put the blame of this on appearances loses sight of the fact that the harmonical or disturbing effect is not due to the necklace itself. It is much more the physical and psychological condition which comes to light here. . . . The head jewellery pieces have the same effect but much more extreme . . . (They are) immediately regarded as aggressive and unpleasant when being worn." That viewpoint certainly demands a great deal from the wearer.

**Above:** *Sweater Pin,* lacquered steel, 1981. **Below:** *Neckpiece,* painted aluminum, 1983



**Reflections: A Tribute to Alma Eikerman**
A Retrospective Exhibition of the Jewelry and Metalsmithing of Alma Eikerman and Forty Indiana University Alumni Metal-Artists
Indiana University Art Museum,
Bloomington, IN
July 10–October 6, 1985
by Gail Farris-Larson

Vital, large in scale and aggressive in design are adjectives that would describe the immediate visual impact of the retrospective of Alma Eikerman and 40 of her past students from Indiana University. The Indiana University Art Museum opened this premier exhibition with hundreds in attendance, among them alumni from all over the world.

The exhibition dealt explicitly with the title, a "tribute" to Alma Eikerman and was a reflection of three decades of metalsmithing at I.U. The retrospective span offered the viewer a unique and distinctive insight into the brilliant sense of design and strong understanding of form reflected in the sensibilities of both Eikerman and her students. This visually commanding collection of metalwork was historically significant within the overall context of metalsmithing in that it recorded the distinguished contributions of one artist and the impact of her work, life and teaching.

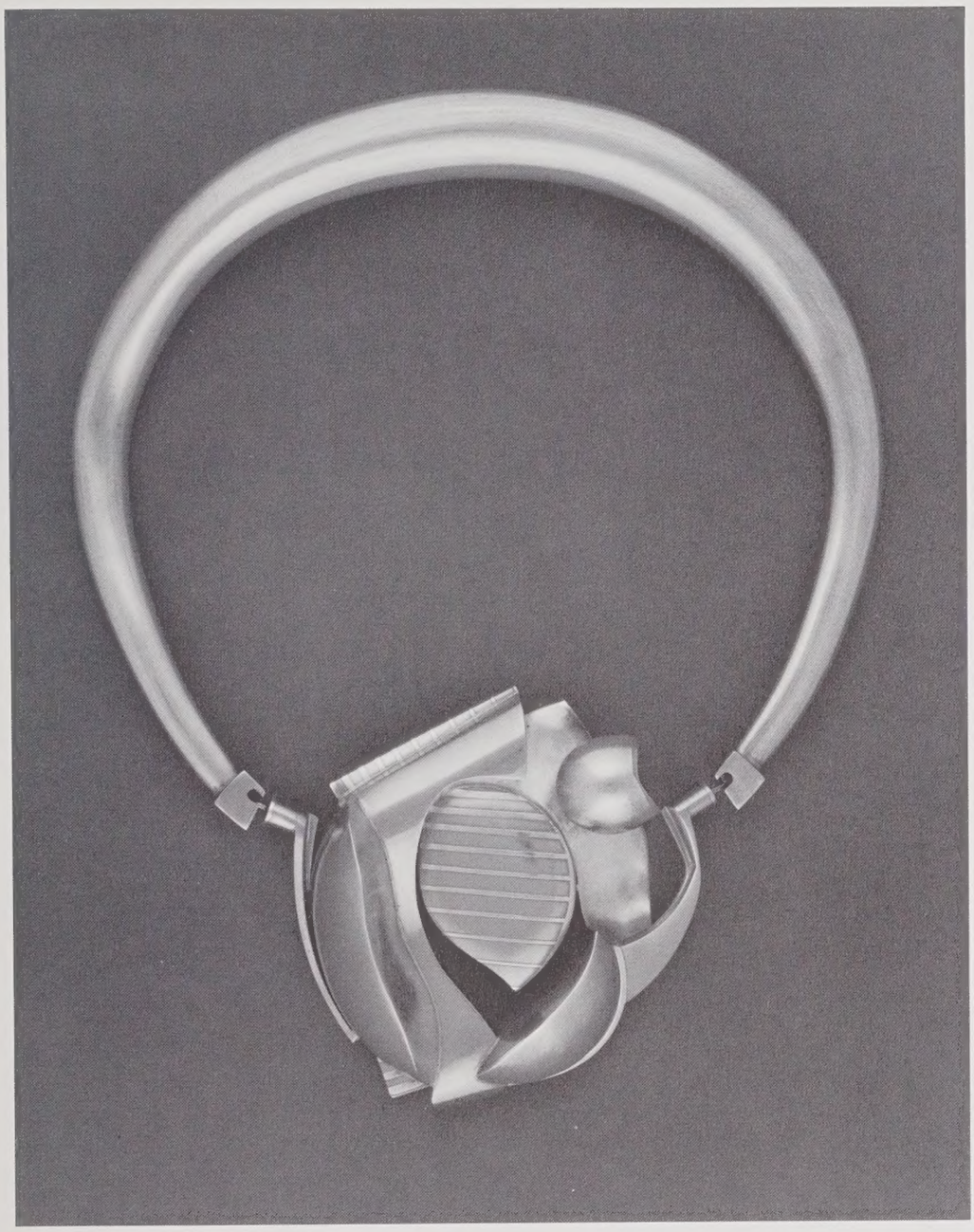
Alma Eikerman has not only the inventiveness to continue her search for new forms but also the courage to reexamine the refinement of her earlier experiments. From her first piece done in 1940 to her current work, the 99 pieces shown traced the strong currents of her esthetic. The development of energetic lines and planes, contrast in textures and the use of bulbous forms all combine to make bold, sculptural constructions for which she is well-known.

The alumni participants were invited to send their older as well as newer pieces, making a total exhibit of 300 works. The large number of older pieces had a curious and surprising effect: they dominated the entire exhibit with their presence and large scale. The exhibition induced both a nostalgia for old influences and associations and a feeling of renewed stimulation.

I have heard frequently the curious comment among metalsmiths that "smithing is dead." This exhibit was an affirmation to the contrary; smithing is decidedly alive and vital. Evidence of this appeared in the number and size of pieces throughout the show that utilized smithing techniques, the frequent incorporation of smithed parts in a piece and the diversity and range of concepts explored. To experience these pieces was really to perceive the unique understanding of form that these artists possess as a result of their strong smithing background.

Indiana University is synonymous with smithing, especially experimental smithed forms. *Coffee Server with Lid* by Susan Ewing and *Coffee and Tea Service* by Lynda LaRoche were two outstanding examples of exceptional design fused with appropriate functional objectives. Marjorie Schick's *Container with Rubber Hose* was breathtaking with its clean, sweeping lines and dynamic sculptural and spatial consid-

**Top:** Alma Eikerman, *Double-Bulged Bowl*, sterling silver, 12.5 × 22 cm, 1975. **Bottom:** Cynthia Eid, *Animal Anomaly*, sterling silver, 4½ × 5 × 5½", 1978. **Opposite page top:** Sibylle Ulsamer, *Pendant and Neckpiece*, sterling and nickel silver, 20.7 × 16.9 cm, 1979. **Bottom:** Richard Bauer, *Double Bowl*, sterling silver, 15.2 × 38.1 cm, 1978. **Bottom right:** Marjorie Schick, *Container with Rubber Hose*, brass, rubber, 22.2 × 20.3 cm, 1983. Photos: Michael Cavanagh, Kevin Montague.

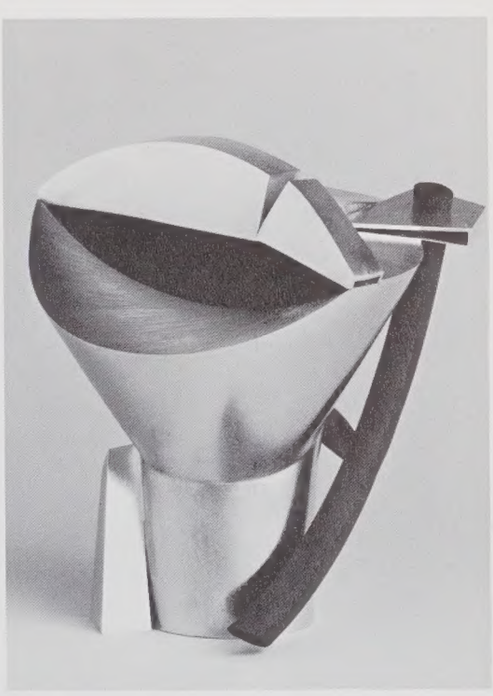


erations, coupled with an inquisitive use of rubber hose as a contrasting element. Richard Bauer's *Double Bowl* embodied the concept "less is more" by seducing the viewer to explore the edges of the bowl, rather than the interior. Sibylle Ulsamer's *Bottle Form with Square Opening* was an appealing combination of the sphere and the cube.

The newer work revealed the diverse directions and multi-levels of development of each artist represented. A lively interest in experimental forms prevailed not only in metal, but in the use of nontraditional materials. A particularly outstanding example of invention and freshness was the linear wooden stick form *Necklace* by Marjorie Schick. *Series Arquitectonia II: Tile Ring; Screen Ring; Frame Ring* by Susan Ewing and *Not a Word Spoken—Too Old* by Kathy Buszkiewicz presented fascinating combinations of metals with other materials. The bracelet and brooch forms of Helen Shirk were exquisite.

If there was a disappointment in the show, it was that some of the "premier" pieces by alumni were not presented, such as Marjorie Schick's highly experimental smithed piece made under Eikerman's Carnegie Grant, Helen Shirk's early smithed pieces, the work of Leslie Leupp, who chose not to participate, or a more complete representation of Jacqueline Fossée's work. Perhaps in a moment of nostalgia, only fellow participants would know or care. But despite this, the exhibition was a timely and judicious survey, particularly for metalsmiths of all generations. One was keenly aware of the thread of continuity that exists in the design sensibilities the group presented as a whole. This is clearly attributed to our association with a dedicated and loving professor, whose experimental approach to technique and design was the inspiration that directed our inquiries to bold new heights and enthusiasm.

*A fully illustrated black-and-white catalog is available from Indiana University Art Museum, Bloomington, IN 47405.*



## Reactive Metals

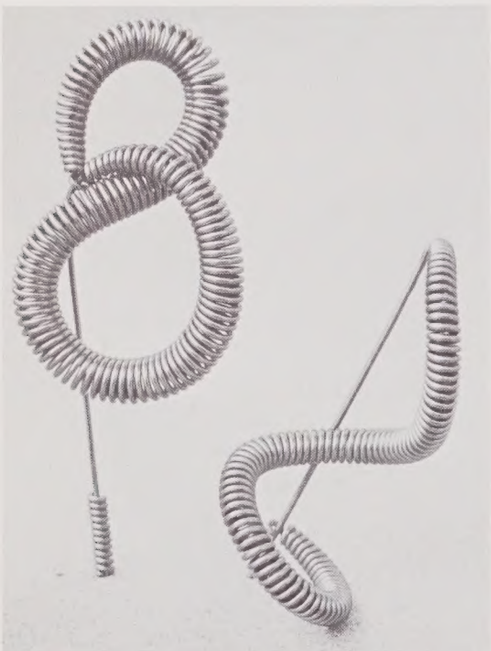
Brookfield Craft Center Gallery, Brookfield, CT
June 2–August 4, 1985
Brookfield/SoNo Craft Complex,
South Norwalk, CT
August 15–October 13, 1985
by Harriet Brisson

At first, when entering the Brookfield Craft Center in South Norwalk, the "Reactive Metals" show curated by Ivy Ross looked dazzling, stunning in its rich display of colored metals. But it quickly became too flashy in the application of high-tech processes to trivial ideas. Much of the work was an ostentacious display of technical finesse. Color had not been used to advantage. Technique was dominant.

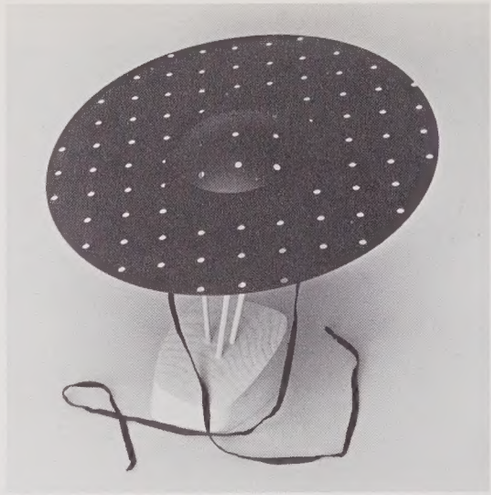
The color possibilities of reactive metals can be very exciting, but most of the exhibitors used it in the same way, without subtlety or purpose. The successful pieces were good because of cohesive ideas, not seductive color. An excellent example of this was Candace Beardslee's *Black Hat,* broad-brimmed with holes punched through it, displayed on a mannequin head with a black stocking stretched over it. Unfortunately, it was placed on such a low base that one had to get down on one's knees to see it. Her work ranged from a brightly colored little pin to a silver and black *Tie* to the *Black Hat*. The *Tie* was Dada in concept with hinges that allowed it to bend into three planes as though it were draped cloth. Was she poking fun at all the other serious works in reactive metal?

Perhaps the best piece in the show was a bracelet by Brigid O'Hanrahan. This ½″ thick and ¾″ wide circle of gold-colored metal was understated in its use of color, yet strong in its delicate tracery of silver on the outer surface. Her nine pins, arranged in three rows of three to form a square functioned best as a single piece of small sculpture, rather than individual pins, due to the interrelationship of abstract patterns.

The small pin by Ivy Ross, composed of subtle color on horizontal and vertical rods in a dull, gold-colored frame, approximately 2″ × 2″, stood out among the other work in its showcase as a little gem. David Tisdale's pair of purple earrings were strong in their geometric design, so well integrated with their evocative color. His pin shown with the earrings did not have the same presence due to its awkward relationship of forms and its scale.



**Dean Smith,** *Pin,* reactive metal



**Candace Beardslee,** *Hat,* anodized aluminum, stand: sugar pine, 19″ H. Photo: Eduardo Calderón

Dean Smith's pins were compelling in their minimalism. Each was a single tightly twisted wire, like an electric element curving three dimensionally, that straightened out to turn into a fastener. They are the product of a truly creative approach to reactive metal in their design and monochromatic utility. However, in being hung from a string, freely floating in space against the confusing background of the gallery, they easily could have been overlooked by the casual viewer.

Vernon Reed used the potential of color produced by reactive metals to make images on his work. Two pins, *You Win* and *The Wall* were strong social and political statements. Their color was critical to the portrayal of the concept expressed by graphic means on a metal surface. According to his resume, Reed is a self-taught artist with a bachelor's degree in psychology. Perhaps this accounts for his not being seduced by the technical process and thus able to use it to its fullest advantage.

The metalworker remains a craftsman as long as media and technique dictate the resulting work. Those artists discussed here transcended process and produced pieces that well qualified them to be called art. Unfortunately, they were in the minority in this exhibit. Equally unfortunate was the low-budget hanging.

## Marie Zimmerman: Art and Craft in Metal

The Metropolitan Museum of Art,
New York City
July 2–September 8, 1985
by Kathleen Nugent Mangan

American design in the early years of the 20th century was characterized by a multiplicity of styles, among them an eclectic revivalism inspired by a vast spectrum of sources. Styles from Europe, the Orient and the American Colonial past were well known, and the work of leading designers reflected these diverse points of inspiration. Rarely were such pieces accurate duplications of the historical works which had inspired their creation. Instead, their assimilation of disparate styles and techniques pro-duced something uniquely American and contemporary.

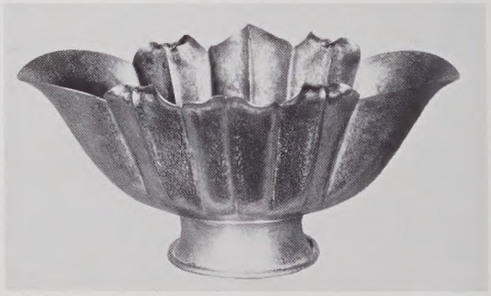
With "Marie Zimmerman: Art and Craft in Metal," the Metropolitan Museum of Art presented the work of a notable exponent of this revivalism. Widely exhibited and recognized in her own time, Marie Zimmerman is largely unfamiliar to contemporary audiences. This exhibition of 16 objects demonstrated her skilled use of varied materials and techniques and confirmed her contribution to American design.

Marie Zimmerman was born in Brooklyn in 1879. She studied metalwork, painting and sculpture at the Art Students League (1897–1901) and Pratt Institute (1901–1903). In 1901, she became a member of the National Arts Club, Gramercy Park, where she later opened a studio. Zimmerman pursued an active career into the 1930s, producing a range of objects from jewelry, flatware and tea sets to furniture and architectural ornaments. Her works were exhibited nationally, and one of her pieces was acquired by the Metropolitan in 1922.

In the recent exhibition, primary focus was on the container form. Zimmerman was shown working with copper, silver, gold, iron, brass, ivory and precious stones; her designs drew inspiration from nature and from sources as diverse as Chinese, Celtic and Persian traditions. A covered box of Chinese style represented refined simplicity in its classic, timeless form. Only a carved jade finial decorated its richly patinated copper surface. A bowl of hammered silver illustrated Celtic influence—skillfully abstracted horses recalling the fantastic animals of Celtic art formed its base. A "Persian" box combined ivory, gilt silver, semiprecious stones and pearls. Its cover of floral petals, pearls and stones lifted to reveal four delicate miniatures framed in ornate doorways between columns.

Naturalistic elements were also reflected in Zimmerman's designs. A silver "leaf" bowl with fine, delicate ivy "growing" across its surface represented this direction in her work. A silver tureen on an organically inspired iron base further illustrated Zimmerman's close observations of nature and her absorption of Oriental traditions in its repoussé decoration. The Metropolitan's piece, a silver flask with a jade top and crystal finial, was decorated in elegant restraint by garlands of gold and rubies.

This small collection of work was enough to reaffirm Marie Zimmerman's place as an important American metalsmith. Clearly, she was both a masterful technician and an artist very much of her time. Her works provide a significant illustration of a major direction in early 20th century American design. I left the exhibition only wishing to see more by this long overlooked artist.



**Marie Zimmerman,** *Bowl,* copper, 8″ H. × 12¾″ D.

STREET JEWELRY
Photos: Sachiko Uozumi

# LETTERS cont.

These excerpts will perhaps assist in a general understanding of the change in my work, the evolution and direction of the new pieces. In response to specific questions or points Griffin makes, I offer these comments. I do not think of these works as nonfunctional, certainly no more so than previous work of mine in the holloware category. I do think of "vessel" as their source, their point of departure, and I want the viewer to look at them in this context. They make reference to function but may or may not be functional. To me that is a strong difference in attitude from that of the premise that the pieces will be nonfunctional. I attribute the aggressive shape of my forms to flora because that has been a strong and consistent fascination to me in this extraordinary environment, whereas punk electric guitars and popular culture are not. Finally, it is the scale of the work, not the forms, which is influenced by the expanse of the Southwest, as well as by the powerful experience of having a child. The work reflects the mix of visual and mental influences in my life at this particular time. I think of all my work as transitional, leading me from one place to another, hopefully not a dead-end.
—Helen Shirk

Dear Editor:
For some time now I have been intending to write my congratulations to and for the publication. I have been exceedingly pleased with the "new" format, the content, and the overall appearance and direction of the magazine. But I have failed to carry out those intentions to tell you. Terrible! But herewith.

Thanks to all that obviously work so hard to get it together and have the perseverance to live with it and see it through. The last issue, though, has been marred by poor assembly —if that be the word—in that the last several pages simply "fell out" of the binding. That's the fault of your printer I would guess and I tell you so he can be cautioned to correct the processes in the future. It's too bad such a defect occurs to detract from the work.
—William F. Kayhoe

Dear Editor:
I am glad for having read the article by C.E. Licka on Gary Griffin and the one by Gary Griffin on Helen Shirk in the same issue of *Metalsmith* (Fall 85). Because there is great interest in promoting more constructive, analytical criticism of work in the medium of metal, it was instructive to note the differences in the two approaches.

Licka's was well researched and documented. It was thorough in describing every work discussed and appropriate photos were included. Analogies were drawn, possible conclusions were offered. Judging from some of the verbal gymnastics used (i.e., mechanistic permutations; positivism methodology), it would be a sure bet that Licka and Griffin have a lot in common.

Griffin's appraisal of Shirk's newest work at the Yaw Gallery tells us only that it doesn't look like his. He can't identify with it. It doesn't speak to him. The research is so shoddy that he doesn't even follow through well enough to insure that the photo published with his writing is one from the current exhibition. The piece shown is from her solo show at the Hand and Spirit gallery. So the visual image doesn't pertain to the points Griffin is trying to make. His language is needlessly argumentative and derogatory for some reason which escapes this reader.

I would like to read an article on Gary Griffin's work by Helen Shirk. Judging from the two pieces mentioned here, I would say that those of us who wish to see the blossoming of good constructive critical writing in this field, would likely find her article more insightful and above all more objective. Griffin does little to cultivate this blossoming by spreading his egocentric fertilizer around.
—Marcia Lewis

**Note:** A Special thanks to our "visual" contributors to this issue: Keith Proctor for his innovative cover photography and Seymour Chwast for his, as always, delightful illustration.

**Correction**
The photographer of the cover of the Fall 85 issue was Gary Heard and Gary Griffin's name was misspelled in the title to C.E. Licka's article in that same issue.

# TECHNICAL BRIEFS

## Fluxes
by Tim McCreight

Dear Tim,
I am a self-taught metalsmith with a quesiton about fluxes. I've read most of the standard textbooks and, while I find the same fluxes mentioned in most, I can't find a clear first choice. Which is the best?
—Desperately Seeking Fluxes

I sympathize with your confusion, but I can't recommend a best flux either. There isn't one. The choice of a flux depends on several factors, all related to the type of work, its scale and the maker's personality.

The purpose of flux is to inhibit the formation of oxides while providing a surface along which solder can flow. This is accomplished by absorbing oxygen before it can reach the metal to form oxides and by remaining liquid at high temperatures. These two qualities, the absorbing power and its gooiness, are what to look for in fluxes.

In situations where a small amount of heat is applied for a short period of time, and where the metal being joined is one that has only a slight tendency to combine with oxygen (e.g., silver or gold), a light-duty flux will do. This category includes the *fluoride-based* yellow or greenish liquids you have probably read about. These are especially appropriate to straightforward jobs like ring sizing, simple wire construction and so on.

An advantage of these fluxes is that they do not build up flux glass, the tough enamel-like residue of borax fluxes. They are called *self-pickling,* that is, they do not need to be cleaned in pickle after soldering. In situations that call for speed or when a pickle pot is unavailable, these would be the fluxes to use. Another, less important advantage of these fluxes is that they are a watery liquid. This makes them easy to apply with a brush and allows for spraying of the workpiece with an atomizer. If you do this, avoid breathing the mist and vapor created.

A popular and familiar product is a white paste called *Handy Flux*. The biggest advantage of this flux is its much greater ability to absorb oxygen. It is preferred for operations that involve oxide-forming base metals like copper and brass and for situations that call for a lot of heat. Even then, the absorbing power of the flux may be exhausted. To see this for yourself, try this experiment: Cut a piece of copper a couple inches square, clean it and coat it with flux. Set it onto a soldering block and apply heat to a spot in the center. First, the water from the flux will boil away, leaving a white crust. The flux will melt, take on a reddish-brown color and sag outward. Next, the color will burn away, leaving the flux clear and the copper a bright orange. Depending on the thickness of the flux layer, this state will last for a minute or two. Then, around the edge of the plate, you'll see the copper start to turn dark. Keeping the flame fixed in the center of the sheet, you'll see the ring of dark green, oxidized copper creep in toward the flame. These are the copper oxides forming. Within a couple minutes the circle of clean copper in the center will have shrunk to a dot and then disappear. This illustrates the absorbing power of the flux and the result of the flux becoming saturated.

If you allow the copper to air cool, examine the flux glass and you'll see how tenacious it can be. Removing it with abrasion is difficult and risky, since the file or abrasive paper tends to slide off the glass and wear down the metal around it. The solution is to dissolve the flux in pickle. In warm Sparex, most flux glass deposits will come off in about five minutes. Especially thick coatings may take longer. The residue can be rinsed off in hot water, but it takes longer.

Besides its oxygen-absorbing power, borax-based flux has other features. One is the fact that it always turns clear at 1100°F, making it a reliable temperature indicator. Another quality, both loved and hated, is the way it acts like a glue. *Handy Flux* can help hold a chip of solder in place when used respectfully, but will stick work relentlessly to the soldering block in unfamiliar hands. Experience is the only guide to controlling this quality.

A third choice in fluxes is the one called *Prip's Flux*. This is

a mixture you can make yourself (I'm sure you've seen the recipe in your reading). It is a liquid like the light-duty flux, but shows a great strength to protect metal against oxides. Prip's does not have the wetting power of the other two, so it is more difficult to develop a complete coating. A recommended method is to warm the metal, brush or spray on the flux, then warm the metal again and repeat the process. This must be done several times to establish an air-tight shield against oxidation. On the positive side, Prip's is not water soluble, so if you cool the piece in water rather than pickle, the flux layer is left relatively undisturbed.

Another solution you might have read about is a mixture of alcohol and boric acid. Before soldering, a jewelry piece is dipped in a concentrated solution of these two ingredients, set on the soldering block and ignited. The alcohol burns off, leaving a thin white layer of borax. This is a good light-duty coating to prevent scale formation, but does not contribute much to the actual flowing of the solder. Many people use this method then apply a small amount of diulte *Handy Flux* to the joint area.

*Send questions for this column (double-spaced, typewritten) to: Tim McCreight, 23 Mill Road Circle, Boylston, MA 01505.*

## Health Hazards Questions & Answers

by Linda Weiss-Edwards

*Dear Linda: Here is a copy of a paper on hydrofluoric acid, researched by my associate Stephanie Lyall. The contents of the paper were examined by the Arizona Poison Control Center and approved. Folks keep showing up with hydrofluoric acid in their studios with no idea of how dangerous it is, and we felt the need to at least put all the information in one place.*
*—Bill Seeley, Reactive Metals Studio*

*Dear Bill: Thank you for your hydrofluoric acid paper. I think the information would be valuable and appreciated by the* Metalsmith *readership.*

## Hydrofluoric Acid: Use and Safety

**General.** Hydrofluoric acid (HF) is a clear, colorless liquid having the unique property of attacking glass and any silica-based material. It is also one of very few substances that will attack titanium, niobium, tantalum, zirconium and hafnium. Although classified as only a moderately strong acid, HF is extremely dangerous, capable of causing severe burns and poisoning if handled carelessly.

Before actually bringing HF into the shop, be sure to have a complete plan, from storage of the acid and solutions, through use and disposal of waste, to emergency safety procedures. The plan should include a call to the doctor to be sure an antidote is available, as well as to the fire department, to notify them of hazardous material storage.

HF is commercially available from chemical supply houses in concentrations to 70%, 48-50% being generally most available. Technical grade HF is adequate for all metal and glass finishing purposes. Due to its hazardous nature, HF is sometimes difficult to obtain since suppliers worry about liability.

**Dangers.** *HF is an extremely hazardous substance!* Exposure to any form of HF can be hazardous. The fumes and liquid, even in dilute concentrations, can cause burns to the eyes, skin, respiratory and digestive tracts. Burns caused by dilute solutions (as low as ½% HF) are especially insidious, as they might not be felt until hours after the exposure. In extreme cases, surgical removal of tissue can be required, and even moderate cases of penetration of acid beneath the skin can require injections of calcium gluconate.

HF fumes at concentrations greater than 48%. Damage occurs when the HF molecule contacts moist mucous membranes, producing hydrofluoric acid. The fumes are extremely acrid, unpleasant and detectable at very low concentrations.

**First Aid.** Emergency information is available by calling your *POISON CONTROL* phone number found inside the front cover of most phone books. In the event of skin exposure to concentrated acid, flush the area with copious amounts of water, while simultaneously removing contaminated clothing. Continue the water flush for at least 15 minutes, then apply an ice-cold saturated solution of epsom salts* for at least 30 minutes. ***Always*** call a physician if you are exposed to concentrated acid, or if you feel a delayed burning sensation. If exposed to a weak solution, wash immediately with soap and copious amounts of water. If HF is gotten into the eyes, flush them with water for at least 15 minutes and call a physician immediately. If inhaled, immediately get to fresh air. If swallowed, do not induce vomiting, but give plenty of fresh water, and call the physician immediately. Harshaw Chemical, a manufacturer of HF, recommends calling a physician for any exposure.

**Storage.** HF should be stored in a well-ventilated area in labeled polypropylene or other acid storage containers (never glass). Food containers should never be used for storage of solutions or as etching tanks, unless they are clearly and permanently marked ***poison.*** All HF handling areas should be kept scrupulously clean, and all pets and people not briefed on the hazards of HF should be excluded from the area.

**Personal Safety.** Chemical goggles, neoprene or other HF rated gloves and apron are the minimum personal safety equipment needed for handling HF solutions. If concentrations greater than 30% are used, a full face shield and complete protective clothing should be worn.

Always use chemistry lab procedures when handling acids. The area should be well organized, uncluttered, with neutralizer readily accessible. Never sniff chemicals or experiment by adding other chemicals to the solutions. ***Deadly combinations could result.***

**Spills.** Treat all spills and wet spots in the vicinity of acid use as though they were acid. ***Take no chances!*** Spills should be neutralized with excess hydrated lime ($Ca(OH_2)$). Lime is available in 50 lb. bags at lumber yards. This is a reasonable amount to have on hand. Sprinkle the lime onto the spill until it has the consistency of heavy paste. Scrape up the mess, then use baking soda in water to check for complete neutralization. Lack of effervescence indicates that the acid has been completely neutralized. Neutralization occurs when the calcium ($CA^{+2}$) in lime combines with the fluorine ion ($F^-$) to form calcium fluoride ($CaF_2$, the composition of the mineral fluorite), which is stable. The $H^+$ of the acid combines with the $OH^-$ of the lime to yield water.

Baking soda (sodium bicarbonate, $NaHCO_3$) should not be used initially to neutralize spills because although it neutralizes the acid, it also produces sodium fluoride (NaF)**, which is toxic. Baking soda also bubbles vigorously (hydrogen gas production), which can spread the mess.

**Solution Preparation and Use.** When making up acid solutions, ***always add acid to water*** slowly and carefully to minimize spattering. Polyethylene or polypropylene graduated cylinders should be used for HF measurement. Etching tanks should also be polyethylene or polypropylene. Always mix and use solutions with adequate ventilation. A chemical hood is ideal, but etching can be done outside or with

positive ventilation. All acid handling equipment should be periodically inspected. If checks or brittleness occur, the equip ment should be replaced.

Keep solutions covered and labeled when not in use. HF is very corrosive to glass and most metals and should not come into contact with these materials. HF should not be used in an enclosed space, since the reaction produces hydrogen gas, which can be explosive. Never allow other chemicals, including household cleansers, to contact the solutions.

If the solution activity is too vigorous, dilute it with water. If too slow, add measured amounts of acid to the solution. With use, the fluoride in the solution will become depleted, making the additon of HF or a fluoride salt necessary. Keeping accurate records of conditions and modifications to solutions will help to make reproduction of results possible. When undesirable or uncontrollable effects begin to occur, dispose of the solution and make up a new one.

Always wash with soap and water after using FH, and wash all contaminated clothing before reuse. Also, neutralize all containers and tools, including safety gear, with a lime and water slurry.

**Disposal.** *Check local, state, and EPA regulations before disposing of metal or glass finishing solutions.* A small quantity of waste HF solution, up to several gallons, can usually be disposed of by flushing it down the drain with copious quantities of cold water, alternated with, or followed by, a lime slurry, to minimize damage to plumbing. It can also be neutralized with lime in a trench outside and then covered.

**Metal Finishing.** The parts to be treated are cut, formed, deburred, thoroughly degreased, and masked with a suitable resist (if patterns are desired). A perforated polypropylene or other acid resistant parts basket is used for dipping. Agitation of the parts is beneficial to ensure an even finish. Plastic tongs, tweezers and titanium wire can be used to hold single pieces. The parts are quickly rinsed in running water and dried after the desired finish is obtained. A more even finish will result with several short dips followed by rinses than by a single long soak. Lime slurry poured down the drain before and after rinsing will minimize damage to plumbing.

If dark stains occur on the metal after the initial dip, they can usually be removed by a second dip in a 50% water, 50% nitric acid solution.

The approximate formula of the etchant/brightener for titanium used in industry is 35% nitric acid ($HNO_3$), 3% HF, the remainder chlorine-free water (chlorine may cause staining) by volume. As a rule of thumb, titanium will etch and brighten in weaker solutions than niobium, and niobium in weaker solutions than tantalum. Also, a more matte finish is seen in HF/nitric acid solutions, while in general, a brighter finish results from HF/nitric acid solutions with other mixed acids. *Never, ever, dip the reactive metals into concentrated HF, or any other concentrated acid! An* ***explosion*** *could result.*

**Specific Formulas**

For titanium, zirconium and hafnium:
- 90 ml nitric acid ($HNO_3$) (conc.)
- 10 ml hydrofluoric acid (HF) (48-50%)
- 1000 ml water

or
- 30 ml nitric acid ($HNO_3$)
- 90 ml hydrochloric acid (HC1) (conc.)
- 20 ml HF (48-50%)
- 50 ml water

For niobium and tantalum:
- 25 ml nitric acid ($HNO_3$) (conc.)
- 50 ml HF (48-50%)
- 500ml water

or
- 300 ml nitric acid ($HNO_3$) (conc.)
- 300 ml sulfuric acid ($H_2SO_4$)
- 100 ml HF
- 300 ml water

rinse, then dip again in:
- 350 ml nitric acid ($HNO_3$)
- 200 ml sulfuric acid ($H_2SO_4$)
- 350 ml water

**Materials checklist**

Acid-resistant gloves
Chemical goggles/face shield
Acid-resistant apron
Baking soda
Epsom salts
Lime
Acid-resistant measuring equipment
Acid-resistant containers
Acid-resistant tongs or tweezers
Baking soda (sodium bicarbonate)

• To make a saturated solution of epsom salts, mix as much of the salts as will dissolve in a volume of room temperature water; then chill and add ice.

• • Sodium fluoride (NaF) is used in extremely dilute solutions to fluoridate municipal water supplies and toothpastes.

The preceding information was compiled from several sources as well as from personal experience. While not exhaustive, it is correct to the best of our knowledge. We assume no responsibility and hereby disclaim all liability for any injuries, and/or damages, and/or loss of profit resulting from the use or attempted use of the chemicals, formulas and techniques described herein.

More comprehensive technical and medical data can be found in the "Chemical Safety Data Sheet SD-25" on HF published by the Manufacturing Chemists Association, 1825 Connecticut Ave., NW, Washington, DC 20009, and the "Material Safety Data Sheet" on HF from the Harshaw Chemical Co., 1945 East 97th St., Cleveland, OH 44106.

An inorganic chemistry lab manual is an invaluable reference source for chemical handling information. If there are any doubts as to the proper use of any chemicals, an expert should be consulted. Often, a local university is an excellent source of information.

*Send questions for this column (double-spaced, typewritten) to: Linda Weiss-Edwards, P.O. Box 1032, Sausalito, CA 94966.*



# Metalsmith

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Compiled by Joanne Polster

Abbreviations are as follows: *il* denotes illustrations and text; *illus* denotes illustration only; *por* indicates photograph of the artist; *exh* or *bk rev* indicates exhibition or book review. *Su, F, W, Sp* indicate Summer, Fall, Winter or Spring issues respectively. An asterisk indicates major articles or reviews.

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**BASS, Kim** exh rev 5/1:41 W85 (1il)
**BECKER, Alida** Peggy Johnson-house-wearables:jewelry: The Works Gallery, Philadelphia, PA. 5/1:42 W85 (3ils)
**BECKER, Friedrich—Influence** (Fridl Blumenthal) 5/3:42 Su85
**BEETLER, Vada Clark** Obit. Bill Kline. 5/2:6 Sp85 (por)
**BENNETT, Jamie** exh rev 5/1:47 W85 (1il); exh rev 5/2:46 Sp85; exh rev 5/4:41 F85, exh rev 5/4:43 F85 (1il)
**BERMAN, Harriete Estel** *5/3:44 Su85 (1il)
**BETTERIDGE, Lois Etherington** 5/2:17 Sp85
**BIRINGUCCIO, Vannoccio** Pirotechnia. Tr. by Vittoria Cozzi-Olivetti. 5/1:30-32 W85 (2 woodcuts)
**BLACKSMITHING, American—Exhibitions** Contemporary blacksmithing: Signature Gallery, Boston, MA. J. Fred Woell. 5/4:44-5 F85 (2ils)
**BLANCHARD, Porter** 5/4:22 F85
**BLUMENTHAL, Fridl** *5/3:42-3 Su85 (5ils, por)
**BOIN, Whitney** exh rev 5/1:47 W85
**BOND, Kener** Engine turning 1680-1980:the tools and technique by Martin Mathews (bk rev). 5/4:57 F85
**BONDI, Michael** exh rev 5/4:45 F85
**BONDI, Stephen** exh rev 5/4:45 F85 (1il)
**BOOK reviews** Contemporary jewellery: The Americas, Australia, Europe and Japan (exh cat). Vanessa Lynn. 5/2:51 Sp85; Dormer, Peter and Turner, Ralph. The new jewelry: trends and traditions. James Evans. 5/4:56-7 F85; The Goodfellow Catalogs: For home and office; To wear & wear & wear; For kids of all ages; Gifts under $50. Glenice Lesley Matthews. 5/4:57 F85; Mathews, Martin. Engine turning 1680-1980:the tools and technique. Kener Bond. 5/4:57 F85; Mathews, Glenice Lesley. Enamels, enameling, enamelists. Belle and Roger Kuhn. 5/1:50 W85; Pelissier, Jaime. The jewelers craft. Tim McCreight. 5/4:57 F85; Pye, David. The nature and art of workmanship. Tim McCreight. 5/1:50-51 W85; Turner, Ralph, jt. author. See: Dormer, Peter; Wooding, Robert R. Diamond setting: the professional approach. Tim McCreight. 5/2:51 Sp85
**BRACKMAN, Joke** Illus: Neckpiece (paint, canvas) 5/4:17 F85
**BRENNAN, Harold** 5/1:16-19 W85
**BROCHARD, Armand—Influence** (Canadian jewelers). 5/2:18 Sp85
**BRODIE, Regis** exh rev 5/1:46 W85
**BUNGERZ, Karl** Susan Hamlet: culture of materials. 5/4:30-35 F85 (10ils)
**BURGER, Christophe** *exh rev 5/1:38 W85 (3ils)
**BURKE, Jean** Jude Ortiz: goldsmith: Art Gallery of Algoma, Sault Ste. Marie, Ont. 5/3:52 Su85 (2ils)
**BURNHAM-KIDWELL, Jay** exh rev 5/3:47 Su85
**BURY, Claus** Illus: Brooch (silver, brass, copper alloys) 5/3:cov il Su85
**BUSCH, Akiko** Beyond the bench: part 3. 5/1:10-13 W85 (13ils); Beyond the bench; part 4. 5/4:26-9 F85 (13ils); The next step. 5/3:24-7 Su85 (5ils); Plastic crafts: Brookfield Craft Center, Brookfield, CT. 5/4:46-7 F85 (6ils)
**CALDER, Alexander** exh rev 5/4:41 F85
**CALLAHAN, Teresa** Metals invitational: New Harmony Gallery of Contemporary Art, New Harmony, IN. 5/2:40 Sp85 (2ils)
**CALLEN, Kenneth** Letters to the editor: cites the omission of Joe Apodaca's name in "Exhibition Feedback" (4/4:44-7 F84). 5/1:4 W85
**CANADA—Museums and galleries** See: Toronto—Museums and galleries
**CARDINALE, Robert** Letters to the editor: remarks on the closing of The Program in Artisanry, Boston University. 5/2:4, 54 Sp85
**CARLBORG-OLSSON, Marita** Illus: Comb and two rings (sterling silver). 5/1:29 W85
**CARÖE, Frances Wright** 5/1:16 W85
**CARROLL, Lewis—Influence** (Peggy Johnson) 5/1:42 W85
**CASTLE, Wendell** 5/1:20 W85
**CATALOGS** See: Goodfellow catalog of wonderful things
**CAVANAUGH, Tracy** exh rev 5/4:44 F85 (1il)
**CETLIN, Cindy** Art, artifact and the jewelry of Ramona Solberg. 5/3:14-17 Su85 (4ils, por); Multiplicity in clay, metal, fiber: Skidmore College, Saratoga Springs, NY. 5/1:46-7 W85 (4ils); Paul A. Lobel 1900–1983, memorial exhibit: Hudson River Museum, Yonkers, NY. 5/1:43-4 W85 (4ils)
**CHAMBERLAIN, Peter** *exh rev 5/2:40 Sp85 (2ils)
**CHAN, Kai** Illus: Multiples (neckpiece) 5/2:22 Sp85; Red cloud (neckpiece). 5/2: cov il Sp 85
**CHANG, Yeo-Ok** *exh rev 5/2:45 Sp85 (1il)
**CHASE, Debra** *exh rev 5/2:42-3 Sp85 (2ils)
**CHISENA, Tina** Illus: Brooch (married metals) 5/3:45 Su85
**CHRAMBANIS, Diana** Diana Vincent Company 5/4:26 F85 (4ils)
**CHRISTENSEN, Hans** 5/1:18-19 W85 (1il, por)
**CHRISTENSEN, Hans—Influence** (Vincent Ferrini) 5/4:36 F85
**CHROMOTEC** Chromotec: a new way of producing photographic images on refractory metals. Julie Horwitz and Anne McGregor. 5/2:52-3 Sp85 (1il; 2diags)
**COATED abrasives** See: Abrasives, Coated
**COGSWELL, John** exh rev 5/2:35 Sp85
**COLES, Thelma** exh rev 5/1:40-41 W85 (1il)
**COLETTE** exh rev 5/4:42 F85
**COLLABORATIONS** Linda Weiss-Edwards and John Edwards (exh rev). 5/1:45 W85 (1il)
**COLLECTORS and collecting** See: Drutt, Helen Williams, collection
**COLLECTORS and collecting—Symposia** See: Fashion Institute of Technology—Symposium
**COLORING** Letters to the editor: reply to "Reticulation and heat coloration of shakudo and shibuichi" (4/4:38-41 F84). Diane Egbert. 5/1:4 W85; see also: Anodizing; Patination
**CONFERENCES** See: SNAG—Conference
**CONSTRUCTIVISM—Influence** (Gary Griffin) 5/4:9 F85
**COOPERATIVE galleries—Sweden** See: Metallum
**COPPER alloys—Finishing** See: Fire stain
**COTLIN, Jerry** Illus: Fishing float and plastic sheep pin 5/3:48 Su85
**COULTER, Lane** Linda Weiss-Edwards and John Edwards:jewelry: Running Ridge Gallery, Santa Fe, NM. 5/1:45 W85 (1il)
**CUBISM—Influence** (Jon Havener) 5/3:53 Su85 (1il)
**DANSERAU, Madelaine—Influence** (Canadian jewelers). 5/2:18 Sp85
**da SILVA, Jack** Komelia Hongja Okim: Montgomery College, Rockville, MD. 5/2:45 Sp85 (1il)
**DAUNIS-DUNNING, Patricia** *5/1:10-13 W85 (3ils)
**DAVIS, Kenny** Illus: Bracelets (silicone rubber) 5/3:48 Su85
**DEKOVAN, Ira** exh rev 5/4:45 F85
**DeLARGE, Edward** exh rev 5/1:47 W85
**DePATTA, Margaret** exh rev 5/4:41 F85
**DERREZ, Paul** Remarks at the SNAG Conference 1985. 5/4:50-51 F85
**DeRUITER, Garret** exh rev 5/2:35 Sp85
**DESCHAMPS, Francois** exh rev 5/1:47 W85 (1il)
**DIAMONDS** Diamond setting: the professional approach by Robert R. Wooding (bk rev). Tim McCreight. 5/2:51 Sp85
**DIANA Vincent Company (jewelry line)** (Diana Chrambanis; Vincent Polisano) 5/4:26 F84 (4ils)
**DICKINSON, Jane** Illus: Clock (neoprene and acrylic) 5/3:54 Su85
**DIE forming** See also: Hydraulic die forming
**DIDUR, David** Illus: Untitled (brooch: ebony, oil paint) 5/2:19 Sp85
**DINGUS, Rick** *exh rev 5/3:53 Su85
**DORMER, Peter** The new jewelry: trends and traditions by Peter Dormer and Ralph Turner (bk rev). James Evans. 5/4:56-7 F85
**DOUBLÉE making** Doublée making. Charles Lewton-Brain. 5/4:38-40 F85 (7ils, 4dwgs)
**DOUGLAS, Betsy** *5/3:50 Su85 (1il); exh rev 5/4:42-3 F85 (1il); A mano, national metals invitational: University Art Gallery, New Mexico State University, Las Cruces, NM. 5/2:48 Sp85 (3ils); The great west metal show and symposium: Northern Arizona University Art Gallery, Flagstaff, AZ. 5/3:46-7 Su85 (6ils); Helen Shirk: The Hand and the Spirit Crafts Gallery, Scottsdale, AZ. 5/2:43 Sp85 (2ils); National jewelry and unique objects invitational: Fine Arts Center of Tempe, AZ. 5/2:46 Sp85 (2ils)
**DRUTT, Helen Williams** Personal notes on the (Helen Williams Drutt) collection. 5/3:11 Su85
**DRUTT, Helen Williams, collection** Discursive art:the Helen Williams Drutt collection of modern jewelry 1964-1984. Carole Hanks. 5/3:6-13 Su85 (14ils, por)
**DUNCAN, Douglas M.—Influence** (Harold Stacey). 5/2:13 Sp85
**EBENDORF, Robert** exh rev 5/1:46-7 W85 (1il)
**EDGCUMBE, Richard** exh rev 5/4:41 F85
**EDUCATION—Summer programs** 5/2:24-6 Sp85
**EDWARDS, John** *exh rev 5/1:45 W85 (1il)
**EGBERT, Diane** Letters to the editor, reply to "Reticulation and heat coloration of shakudo and shibuichi" (4/4:38-41 F84). 5/1:4 W85
**EICHNER, Laurits** 5/1:16 W85
**ELLISON, Christopher** exh rev 5/2:42 Sp85
**ELMDAHL, Ninni** Illus: Torso (nickel, silver and iron). 5/1:29 W85
**ENAMEL** Enamels, enameling, enamelists by Glenice Lesley Matthews (bk rev). Belle and Roger Kuhn. 5/1:50 W85
**ENAMEL—Exhibitions** VII biennale international l'art de l'email: Chapelle du Lycée Gay-Lussac, Limoges, France. Kathryn R. Gough. 5/1:44 W85 (1il)
**ENAMELISTS, American—Exhibitions** See: Banyas, Martha; Bennett, Jamie
**ENGRAVING** Engine turning 1680–1980: the tools and technique by Martin Mathews (bk rev). Kener Bond. 5/4:57 F85
**EQUIPMENT and tools** See: Hydraulic presses; Rose engines; Soldering blocks; Ventilation systems
**ERBACHER, Ann E.** Rick Dingus, Jon Havener, Fred Parker: Gallery Karl Oskar, Westwood Hills, KS. 5/3:53 Su85 (1il)
**ESMERIAN, Ralph** Art nouveau and art deco (symposium presentation). 5/3:53 Su85
**ETCHING—Technique** Fusion patterns. Kate Wagle. 5/1:22-5 W85 (4ils); Technical briefs: relationship between various acids and metals in the etching process. Tim McCreight. 5/4:56 F85
**EVANS, James** Illus: 13 reasons (stick pins) 5/2: cov il Sp85; Illus: 13 reasons (stickpins); Brooches (painted stainless steel) 5/2:19, 20 Sp85; A history of contemporary Canadian jewellery. 5/2:16-23 Sp85 (16ils); The new jewelry: trends and traditions by Peter Dormer and Ralph Turner (bk rev). 5/4:56-7 F85; Remarks at the SNAG Conference 1985. 5/4:51 F85
**EWING, Susan R.** Five German jewelers. 5/3:18-23 Su85 (12ils)
**EXHIBITIONS** A mano, national metals invitational: University Art Gallery, New Mexico State University, Las Cruces, NM. Betsy Douglas. 5/2:48 Sp85 (3ils); The aquarellist and the smith: Art Center, San Luis Obispo, CA. Barbara Young. 5/1:45 W85 (2ils): Carol Kumata, Beth Potter Rizo-Patron: Elaine Potter Gallery, San Francisco, CA. Florence Resnikoff. 5/2:41 Sp85 (2ils); Contemporary blacksmithing: Signature Gallery, Boston, MA. J. Fred Woell. 5/4:44-5 F85 (2ils); Contemporary jewellery: the Americas, Australia, Europe and Japan: National Museum of Modern Art, Kyoto, Japan. Florence Resnikoff. 5/2:44 Sp85 (3ils); Contemporary metals USA: Downey Museum of Art, Downey, CA. Carolyn Novin. 5/4:42-3 F85 (7ils); David Freda/Stephen Walker: Contemporary Metalsmiths Gallery, Chapel Hill, NC. Jane Kessler. 5/3:46 Su85 (1il); Donald Friedlich, Enid Kaplan: Convergence Gallery, New York City. Vanessa Lynn. 5/2:46-7 Sp85 (5ils); Embellishments: Rebekah Laskin and Leslie Leupp: Merritt/Fredric Gallery, Rochester, NY. William Baran-Mickle. 5/2:50 Sp85 (2ils); The great west metal show and symposium: Northern Arizona University Art Gallery, Flagstaff, AZ. Betsy Douglas. 5/3:46-7 Su85 (6ils); Jewelry and beyond: Mitchell Museum, Mount Ver-

non, IL. David Prince. 5/1:40-41 W85 (7ils); Metals: Dawson Gallery, Rochester, NY. Deborah Norton. 5/2:42-3 Sp85 (4ils); Multiplicity in clay, metal, fiber: Skidmore College Art Center, Saratoga Springs, NY. Cynthia Cetlin. 5/1:46-7 W85 (4ils); National jewelry and unique objects invitational: Fine Arts Center of Tempe, AZ. Betsy Douglas. 5/2:46 Sp 85 (2ils); Passing out: John Holden Gallery, Manchester Polytechnic, Manchester, England. Peter Gainsbury. 5/3:54 Su85 (4ils); Plastic crafts: Brookfield Craft Center, Brookfield, CT. Akiko Busch. 5/4:46-7 F85 (6ils); Preciousness (review of "Precious objects: a national invitational exhibition of contemporary metalwork": Worcester Craft Center, Worcester, MA) Vincent Ferrini. 5/2:30-35 Sp85 (5ils); Rick Dingus, Jon Havener, Fred Parker: Gallery Karl Oskar, Westwood Hills, KS. Anne E. Erbacher. 5/3:53 Su85 (1il); VII biennale international l'art de l'email; Chapelle du Lycée Gay-Lussac, Limoges, France. 5/1:44 W85 (1il); Stanley Lechtzin, Vernon Reed: The Works Gallery, Philadelphia, PA. Vickie Sedman. 5/1:39 W85 (3ils); Yeo-Ok Chang and Helene Safire: Plum Gallery, Kensington, MD. Komelia Hongja Okim. 5/2:45 Sp85 (3ils); See also: Jewelry—Exhibitions

**EXHIBITIONS, Solo** Stephen J. Albair: 9 lives and other lies ... 1984: 80 Washington Square Galleries, New York City. Pat Maggio. 5/1:48 W85 (1il); Amy Anthony: studies in aluminum: VO Galerie, Washington, D.C. Yvonne Arritt. 5/2:49 Sp85 (1il); Martha Banyas: the mask behind the mask: Contemporary Crafts Gallery, Portland, OR. Jalaine Madura. 5/2:49 Sp85 (1il); Jamie Bennett: Helen Drutt Gallery, Philadelphia, PA. Brigid O'Hanrahan. 5/4:43 F85 (1il); Christophe Burger: Elaine Potter Gallery, San Francisco, CA. Carrie Adell. 5/1:38 W85 (3ils); Peter Chamberlain: exhibition of unmetal: Hartman Center Gallery, Bradley University, Peoria, IL. Karl Moehl. 5/2:40 Sp85 (2ils); Betsy Douglas: MFA thesis exhibition: Harry Wood Art Gallery, Arizona State University, Tempe, AZ. Anne Krohn Graham. 5/3:50 Su85 (1il); Martha Glenny: Souvenirs-le souvenir: Anna Leonowens Gallery, Halifax, N.S. Joanne Poirier and Paul Leathers. 5/3:49 Su85 (1il); Peggy Johnson—housewearables: jewelry: The Works Gallery, Philadelphia, PA. Alida Becker. 5/1:42 W85 (3ils); Elisabeth Kodré-Defner: Elaine Potter Gallery, San Francisco, CA. Britta Schömer. 5/4:50 F85 (1il); Micki Lippe: New York: Plum Gallery, Kensington, MD. Betty Helen Longhi. 5/3:52 Su85 (1il); Paul A. Lobel 1900–1983, Memorial exhibit: Hudson River Museum, Yonkers, NY. Cynthia Cetlin. 5/1:43-4 W85 (4ils); Dalya Luttwak: portfolio exhibit: Aaron Faber Gallery, New York City. Komelia Hongja Okim. 5/4:48 F85 (2ils); Kristin Moore, retrospective: Artwear, New York City. Vanessa Lynn. 5/3:50-51 Su85 (4ils); Komelia Hongja Okim: Montgomery College, Rockville, MD. Jack da Silva. 5/2:44 Sp85 (1il); Jude Ortiz:goldsmith: Art Gallery of Algoma, Sault Ste. Marie, Ont. Jean Burke. 5/3:52 Su85 (2ils); Pamela Ritchie: cancelled icons: The Upstairs Gallery, Mount Saint Vincent University, Halifax. Vita Plume. 5/2:50 Sp85 (1il); Helen Shirk: The Hand and the Spirit Crafts Gallery, Scottsdale, AZ. Betsy Douglas. 5/2:43 Sp85 (2ils); Helen Shirk: Yaw Gallery, Birmingham, MI. Gary S. Griffin. 5/4:46 F85 (1il); Munya Avigail Upin: Willingheart Gallery, Austin, TX. Alice Shukalo. 5/4:49 F85 (2ils); Linda Weiss-Edwards and John Edwards: jewelry: Running Ridge Gallery, Santa Fe, NM. Lane Coulter. 5/1:45 W85 (1il); Ignatius Widiapradja: sculpture and sculptural body adornments: Contemporary Crafts gallery, Portland, OR. Jalaine Madura. 5/4:48-9 F85 (1il); Jan Yager: Swan Galleries, Philadelphia, PA. Barbara Satterfield. 5/1:42-3 W85 (2ils)

**FAIRS** See: Trade Shows

**FASHION Institute of Technology—Symposium** Collectors and collections:an international jewelry symposium. Charles Lewton-Brain. 5/3:53 Su85

**FASHION jewelry** See also: Production jewelry; Editorial 5/1:4 W85

**FENSTER, Fred** Two sensibilities: Art Department Gallery, Montgomery College, Rockville, MD 5/3:49 Su85 (2ils)

**FERRINI, Vincent** Preciousness (review of "Precious objects:a national invitational exhibition of contemporary metalwork": Worcester Craft Center, Worcester, MA). 5/2:30-35 Sp85 (5ils); *5/4:36-37 F85 (5ils)

**FIKES, Jimmy** exh rev 5/4:45 F85

**FINISHING—technique** See also: Abrasives, Coated; Fire stain; Tumble finishing

**FISCH, Arline** *exh rev 5/3:46-7 Su85 (2ils)

**FIRE stain removal** Technical briefs: fire stain on brass. Tim McCreight. 5/3:56 Su85

**FLATWARE** Illus: Adler, Allan. 5/4:22, 25 F85

**FLECKSTEIN, Dan** Ars (jewelry line) 5/1:10-13 W85 (3ils)

**FLEMING, Baron Erik—Influence** (Harold Stacey) 5/2:14 Sp85

**FLUXES** Sources for fluoride-free fluxes. 5/3:56 Su85

**FLYNN, Pat** exh rev 5/2:35 Sp85; exh rev 5/2:40 Sp85

**FOLEY, Mark** Structure and ornament: American modernist jewelry 1940-1960. 5/3:36-9 Su85 (6ils)

**FREDA, David** *exh rev 5/3:46 Su85

**FRIEDLICH, Donald** *exh rev 5/2:46-7 Sp85 (2ils); exh rev 5/4:44 F85 (1il)

**FUSED metals** See also: Doublée making

**FUSION welding** Fusion patterns. Kate Wagle. 5/1:22-5 W85 (7ils; biblio)

**GAINSBURY, Peter** Passing out: John Holden Gallery, Manchester Polytechnic, Manchester, England. 5/3:54 Su85 (4ils)

**GALLERIES—Canada** *5/2:21 Sp85; See also: Toronto—Museums and galleries

**GALLERIES—Italy** See: Rome—Museums and galleries

**GALLERIES—Sweden** See: Metallum

**GALLERIES—U.S.** See: The VO Galerie

**GARRETT, Paula B.** exh rev 5/2:32, 35 Sp85

**GEM setting** Diamond setting:the professional approach by Robert R. Wooding (bk rev). Tim McCreight. 5/2:51 Sp85

**GESSEL, Wolfgang** Illus: Sterling silver coffee set. 5/1:27 W85

**GETLEIN, Frank** Fridl Blumenthal. 5/3:42-3 Su85 (5ils, por)

**GLENNY, Martha** *exh rev 5/3:49 Su85 (1il); Illus: Compositions & conventions #2. 5/2:cov il Sp85; Illus: Brooch (sterling silver) 5/2:19 Sp85

**GOEBEL, David** exh rev 5/2:35 Sp85 (1il)

**GOESSLER-SNYDER, Toni** Illus: Bracelet (gold, silver, stones) 5/3:cov il Su85; Illus: Brooch (sterling silver, gold, ivory, pink tourmaline) 5/3:8 Su85

**GOLDER, Stuart** exh rev 5/2:35 Sp85

**GOLDSMITHING—Technique** Pirotechnia. Vannoccio Biringuccio. 5/1:30-32 W85 (2 woodcuts)

**GOLDSMITHING, Etruscan** Illus: Regolini-Galassi fibula 5/1:34 W85

**GOOD, Michael** exh rev 5/2:34 Sp85; Interview. 5/3:24-7 Su85 (3ils)

**GOODFELLOW catalog of wonderful things:** For home & office; To wear & wear & wear; For kids of all ages; Gifts under $50 (bk rev). Glenice Lesley Matthews. 5/4:57 F85

**GOSSNER, Ingrid** *5/3:22-3 Su85 (3ils)

**GOUGH, Kathryn R.** VII biennale international l'art de l'email: Chapelle du Lycée Gay-Lussac, Limoges, France. 5/1:44 W85 (1il)

**GRAHAM, Anne Krohn** Betsy Douglas: MFA thesis exhibition: Harry Wood Art Gallery, Arizona State University, Tempe, AZ. 5/3:50 Su85 (1il)

**GRANNIS, Timothy** *5/4:29 F85 (3ils)

**GRIFFIN, Gary** *5/4:8-15 F85 (11ils, cov il, por); 5/1:20-21 W85 (2ils); exh rev 5/1:40 W85; exh rev 5/1:46 W85 (1il); exh rev 5/2:48 Sp85; Helen Shirk: Yaw Gallery, Birmingham, MI. 5/4:46 F85 (1il)

**GRIFFITH, Bob** exh rev 5/4:44 F85

**GUNNARSSON, B. Malin** Metallum: A Swedish metalsmithing cooperative. 5/1:26-9 W85 (9ils; por); Illus: Rain I (engraved and etched sterling silver relief) 5/1:28 W85

**GUNTHER, Randel** exh rev 5/2:35 Sp85

**GUSTAVSSON, Göran** Illus: Chairs (sterling silver). 5/1:29 W85

**HAMLET, Susan** exh rev 5/1:47 W85; Illus: Shim bracelet 1 (stainless steel, silver, plastic, rubber) 5/3:11 Su85; *5/4:30-35 F85 (10ils)

**HANDLER, Peter** exh rev 5/4:47 F85 (1il)

**HANKS, Carole** Discursive art: the Helen Williams Drutt collection of modern jewelry 1964–1984. 5/3:6-13 Su85 (14ils; por); Exhibition methodology for SNAG Conference 1985. 5/4:51 F85

**HARPER, William** exh rev 5/1:47 W85; exh rev 5/2:33,34 Sp85 (1il); exh rev 5/4:41 F85; Excerpt from introduction to "Precious objects" (exh cat). 5/2:30-31 Sp85

**HAVENER, John** *exh rev 5/3:53 Su85 (1il); exh rev 5/2:46 Sp85 (1il)

**HEALTH hazards** Sources for fluoride-free fluxes; ventilation systems, evaluations of soldering blocks and safety glasses. Linda Weiss-Edwards. 5/3:56 Su85

**HEES, Maria** Illus: Multiple brooches (plexiglas) 5/4:19 F85

**HELG, Franca** Illus: Teapot. 5/1:37 W85

**HELZER, Richard** exh rev 5/1:40 W85

**HERMSEN, Hermann** Illus: Earrings (wire) 5/4:19 F85

**HEWITT, Crissa** *exh rev 5/1:45 W85 (2ils)

**HOLLOWARE, Etruscan** Illus: Cista (bronze); Patera (bronze); Oinochoe (bronze); Biconical funerary urn and flask; Raised bowl (bronze); Cauldron (bronze) 5/133-7 W85

**HOLT, Cathy Lynne** exh rev 5/4:42 F85 (1il)

**HORN, John** exh rev 5/4:46, 47 F85 (1il)

**HORWITZ, Julie** Chromotec: a new way of producing photographic images on refractory metals. Julie Horwitz and Anne McGregor. 5/2:52-3 Sp85 (1il; 2diags)

**HU, Mary Lee** exh rev 5/1:47 W85

**HYDRAULIC die forming** *5/3:28-35 Su85 (16ils, 5diags, biblio., suppliers list, glossary); Letters to the editor:reply to "Hydraulic die forming for the artist/metalsmith" (5/3:28-35 Su85). Marga Kassimir. 5/4:6 F85

**HYDRAULIC presses** *5/3:29, 33 Su85 (5diags, biblio, suppliers list)

**ISAACSON, Mark** The search for modernist jewelry. 5/3:40-41 Su85 (5ils)

**ITALY—Museums and galleries** See: Rome—Museums and galleries

**JAGODA, Peter** exh rev 5/3:47 Su85 (1il)

**JANSEN, Theo** Illus: Neckpiece (patinated copper braid) 5/2:16 Sp85

**JAWORSKI, David** Illus: Compass series (bronze and blown glass). 5/1:49 W85

**JEWELERS, American (feature articles)** See: Blumenthal, Fridl; Ferrini, Vincent; Hamlet, Susan; Solberg, Ramona

**JEWELERS, American—Exhibitions** See: Anthony, Amy; Banyas, Martha; Bennett, Jamie; Chang, Yeo-Ok; Douglas, Betsy; Edwards, John; Friedlich, Donald; Johnson, Peggy; Kaplan, Enid; Laskin, Rebekah; Lechtzin, Stanley; Leupp, Leslie; Lippe, Micki; Luttwak, Dalya; Metcalf, Bruce; Moore, Kristin; Okim, Komelia Hongja; Reed, Vernon; Safire, Helene; Weiss-Edwards, Linda; Widiapradja, Ignatius; Yager, Jan

**JEWELERS, Canadian** *5/2:16-23 Sp85 (16ils)

**JEWELERS, Canadian—Exhibitions** See: Glenny, Martha; Ortiz, Jude; Ritchie, Pamela

**JEWELERS, French—Exhibitions** See: Burger, Christophe

**JEWELERS, German** Five German jewelers (Sabine Scheuble, Wilhelm Mattar, Andre Ribero, Heinz Sammeck, Ingrid Gossner). Susan R. Ewing. 5/3:18-23 Su85 (12ils); See also: Kodré-Defner, Elisabeth

**JEWELERS, Korean—Exhibitions** See: Yoo, Lizzy

**JEWELRY—Collections** See: Drutt, Helen Williams, collection

**JEWELRY—Collectors and collecting** Collectors and collections:an international jewelry symposium: Fashion Institute of Technology, New York City. Charles Lewton-Brain. 5/3:53 Su85

**JEWELRY—Exhibitions** Contemporary jewellery: the Americas, Australia, Europe and Japan (exh cat) (bk rev). Vanessa Lynn. 5/2:51 Sp85; Jamie Bennett selects: Plum Gallery, Kensington, MD. Gretchen Klunder-Raber. 5/4:44 F85 (3ils); Jewelry and beyond: Mitchell Museum, Mount Vernon, IL. David Prince. 5/1:40-41 W85 (7ils); Learning and earning: Jewelry Students Co-op, Kent State University, Kent, OH. Bruce Metcalf. 5/3:48 Su85 (4ils); Masterworks of contemporary American jewelry: sources and concepts: Victoria and Albert Museum London, England. Deborah Norton. 5/4:41 F85; Metals invitational: New Harmony Gallery of Contemporary Art, New Harmony, IN. Teresa Callahan. 5/2:40 Sp85 (2ils); Metalwork '85: Plum Gallery, Kensington, MD. Joke van Ommen. 5/3:45 Su85 (5ils). Letters to the editor: correction of captions. 5/4:6 F85; Two sensibilities (Lizzy Yoo, Bruce Metcalf):Art Department Gallery, Montgomery College,

Rockville, MD. Fred Fenster. 5/3:49 Su85 (2ils)
**JEWELRY, American—History** The search for modernist jewelry. Mark Isaacson. 5/3:40-41 Su85 (5ils); Structure and ornament: American modernist jewelry 1940-1960. Mark Foley. 5/3:36-9 Su85 (6ils)
**JEWELRY, Canadian—History** A history of contemporary Canadian jewellery. James Evans. 5/2:16-23 Sp85 (16ils)
**JEWELRY—European** The new jewelry: trends and traditions by Peter Dormer and Ralph Turner (bk rev). James Evans. 5/4:56-7 F85
**JEWELRY design—Principles** *5/3:8-13 Su85
**JEWELRY making** The jewelers craft by Jaime Pelissier (bk rev) Tim McCreight. 5/4:57 F85
**JOHNSON, Peggy** *exh rev 5/1:42 W85 (3ils)
**KAPLAN, Enid** *exh rev 5/2:46-7 Sp85 (3ils); exh rev 5/1:40, 41 W85 (1il)
**KASSIMIR, Marga** Letters to the editor: reply to "Hydraulic die forming for the artist/metalsmith" (5/3:28-35 Su85). 5/4:6 F85
**KAWAGUCHI, Tatsuo** Illus: Blue catalyst 5/2:44 Sp85
**KEITH, Bill** exh rev 5/4:47 F85 (1il)
**KESSLER, Jane** David Freda/Stephen Walker: Contemporary Metalsmiths Gallery: Chapel Hill, NC. 5/3:46 Su85 (1il)
**KIELMAN, Hero** 5/2:17 Sp85
**KINGSLEY, Susan** Hydraulic die forming for the artist/metalsmith. 5/3:28-35 Su85 (16ils; 5diags; biblio, suppliers list; glossary). Illus:Floating variations hung up in a structure; Shakudo bottle (with Judy Ubick); Pearly pink moment pin; Embranglement broach; More or less improbable bracelet; Letters to the editor: reply to "Hydraulic die forming for the artist/metalsmith" (5/3:28-35 Su85). Marga Kassimir. 5/4:6 F85
**KLEIN, Alice** Illus: Epoxy neckpiece, series 2 (acrylic, epoxy, nickel silver) 5/3:6 Su85; TKO (jewelry line) 5/4:27 F85 (3ils)
**KLINE, Bill** Vada Clark Beetler 1929–1984 (obit.) 5/2:6 Sp85 (por)
**KLOCKE, Christel—Influence** (Canadian jewelers). 5/2:18 Sp85
**KLUNDER-Raber, Gretchen** Jamie Bennett selects: Plum Gallery, Kensington, MD 5/4:44 F85 (3ils)
**KNUPPER, Friedrich** Illus: Brooch (lacquered steel, oxidized silver) 5/4:19 F85
**KODRÉ-DEFNER, Elisabeth** *exh rev 5/4:50 F85 (1il)
**KRAMER, Sam** *5/3:36-8 Su85 (1il)
**KRUPENIA, Deborah** exh rev 5/4:42 F85
**KUHN, Belle and Roger** Enamels, enameling, enamelists by Glenice Lesley Matthews (bk rev). 5/1:50 W85
**KUHN, Roger** The VO Galerie: A European jewelry showcase in the American capital. 5/4:16-19 F85 (6ils; por)
**KUMATA, Carol** *exh rev 5/2:41 Sp85 (1il); exh rev 5/1:46 W85; exh rev 5/2:48 Sp85
**LaFOLLETTE, Curtis** Vincent Ferrini. 5/4:36-7 (5ils)
**LAND, George** Illus: Flask 5/3:54 Su85
**LaPLANTZ, David/David D. Deco (jewelry line)** *5/4:28 F85 (3ils)
**La ROCHE, Lynda** Illus: Hat earrings (sterling silver) 5/2:41 Sp85
**LASKIN, Rebekah** *exh rev 5/2:50 Sp85 (1il); exh rev 5/4:44 F85 (il)
**LATHES** See: Rose engines
**LAURITZEN, Fred** exh rev 5/1:45 W85 (2ils)
**LAWRENCE, Peter** Illus: Brooch (straw, sterling silver) 5/2:22 Sp85
**LEATHERS, Paul, jt. author** See: Poirier, Joanne
**LECHTZIN, Stanley** *exh rev. 5/1:39 W85 (2ils); Illus: Brooch (electroformed silver gilt with tourmalines and crystals) 5/3:11 Su85; exh rev 5/4:41 F85
**LEHMAN, Wilma** Illus: Puffin pin (sterling silver, tourmaline) 5/3:45 Su85
**LEUPP, Leslie** *exh rev 5/2:50 Sp85 (1il); exh rev 5/2:46 Sp85; exh rev 5/2:48 Sp85 (1il)
**LEWIS, Keith** Ars (jewelry line) 5/1:10-13 (3ils)
**LEWTON-Brain, Charles** Illus: Brooch (24k gold) 5/2:19 Sp85; 5/2:20 Sp85; Collectors & collections: an international jewelry symposium: Fashion Institute of Technology, New York City. 5/3:53 Su85; Doublée making. 5/4:38-40 F85 (7ils, 4dwgs)
**LICKA, C. E.** Ornamental polarities: Gary Griffin's jewelry and constructions. 5/4:8-15 F85 (11ils, cov il, por)
**LIPPE, Micki** *exh rev 5/3:52 Su85 (1il)
**LLOYD, Timothy L.** Illus: Brooch 5/1:41 W85
**LOBEL, Paul A.** *exh rev 5/1:43-4 W85 (4ils); Illus: Pin (sterling silver) 5/3:39 Su85
**LONG, Randy** exh rev 5/2:48 Sp85
**LONGHI, Betty Helen** Micki Lippe:New York: Plum Gallery, Kensington, MD. 5/3:52 Su85 (1il)
**LOUIE, Kenneth** *exh rev 5/2:42 Sp85 (1il)
**LUCK, David** exh rev 5/4:42 F85
**LUHAN, Mabel Dodge—Influence** (Gary Griffin) 5/4:12 F85
**LUTTWAK, Dalya** *exh rev 5/4:48 F85 (2ils)
**LYNN, Vanessa** Contemporary jewellery: the Americas, Australia, Europe and Japan (exh cat) (bk rev). 5/2:51 Sp85; Donald Friedlich, Enid Kaplan: Convergence Gallery, New York City. 5/2:46-7 Sp85 (5ils); Kristin Moore, retrospective: Artwear, New York City. 5/3:50-51 Su85 (4ils); Packing it in: the not so secret methods of art transportation. 5/2:36-9 Sp85 (3diags)
**MACCHIARINI, Peter** Illus: Pin/pendant (sterling silver, iconel, brass) 5/3:40 Su85
**MADURA, Jalaine** Ignatius Widiapradja: sculpture and sculptural body adornments: Contemporary Crafts Gallery, Portland, OR. 5/4:48-9 F85 (1il); Martha Banyas: the mask behind the mask: Contemporary Crafts Gallery, Portland, OR. 5/2:49 Sp85 (1il)
**MAGGIO, Pat** Stephen J. Albair: 9 lives and other lies . . . 1984: 80 Washington Square Galleries, New York City. 5/1:48 W85 (1il)
**MANHEIM, Julia** Illus: Neckpiece (plastic tubing) 5/4:18 F85
**MARCUS, Heather** exh rev 5/4:42-3 F85 (1il)
**MARKETING** The next step (interview with Michael Good and Etienne Perret). Akiko Busch. 5/3:24-7 Su85 (5ils)
**MARSH, Gary** Illus: Native American item 5/1:41 W85
**MARSHALL, John** exh rev 5/1:41 W85; exh rev 5/4:41 F85
**MASKS as design motif** Martha Banyas: the mask behind the mask: Contemporary Crafts Gallery, Portland, OR. Jalaine Madura. 5/2:49 Sp85 (1il)
**MATHEWS, Martin** Engine turning 1680–1980:the tools and technique (book rev). Kener Bond. 5/4:57 F85
**MATTAR, Wilhelm** *5/3:20-21 Su85 (2ils)
**MATTHEWS, Glenice Lesley** Enamels, enameling, enamelists by Glenice Lesley Matthews (bk rev). Belle and Roger Kuhn. 5/1:50 W85; Goodfellow catalog of wonderful things (bk rev). 5/4:57 F85
**MATZDORF, Kurt** exh rev 5/2:34 Sp85 (1il)
**MAWDSLEY, Richard** exh rev 5/2:34 Sp85; exh rev 5/2:46 Sp85; Illus: The Pequod (pendant, silver, green onyx, carnelian) 5/3:9 Su85
**McCALL, ROBERT** exh rev 5/2:48 Sp85
**McCREIGHT, Tim** exh rev 5/2:30, 34 Sp85 (1il); Diamond setting: the professional approach by Robert R. Wooding (bk rev). 5/2:51 Sp85; The jewelers craft by Jaime Pelissier (bk rev). 5/4:57 F85; The nature and art of workmanship by David Pye (bk rev). 5/1:50-51 W85; Technical briefs: coated abrasives. 5/1:51 W85; Technical briefs: fire stain on brass. 5/3:56 Su85; Technical briefs:relationship between various acids and metals in etching process. 5/4:56 F85
**McEWAN, Robert** Illus: Toast rack 5/3:54 Su85
**McGREGOR, Anne, jt author** See: Horwitz, Julie
**McLACHLAN, Hugh** Illus: The circus-part four and part five. 5/2:44 Sp85
**MERRITT, Barry S.** Illus: In homage to Ivan Kliun 5/1:41 W85
**METAL Arts Guild, Toronto—History** 5/2:17 Sp85
**METALLUM** A Swedish metalsmithing cooperative. B. Malin Gunnarsson. 5/1:26-9 W85 (9ils; por)
**METALSMITH—Index** Index to issues 4/1–4/4. Joanne Polster. 5/4:52-5 F85
**METALSMITHING—Technique** See: Doublée making; Fusion welding; Weaving techniques in metal
**METALSMITHS (feature articles)** Adler, Allan; Bacharach, David Paul; Ferrini, Vincent; Griffin, Gary; Hamlet, Susan. See also: Jewelers
**METALSMITHS, American—Solo Exhibitions** See: Freda, David; Shirk, Helen; Upin, Munya Avigail; Walker, Stephen
**METALSMITHS, Swedish** Metallum: a Swedish metalsmithing cooperative. 5/1:26-9 W85 (9ils, por)
**METAPHOR in metal** Image as metaphor (symposium): Beaver College, Glenside, PA. Dana Standish. 5/3:44 Su85 (3ils) (Work of Harriete Estel Berman, J. Fred Woell, Bruce Metcalf)
**METCALF, Bruce** *5/3:44 Su85 (1il); *exh rev 5/3:49 Su85 (1il); exh rev 5/2:48 Sp85; exh rev 5/1:46 W85; Illus: Bright figures over a low, bad land. (brass, silver, copper, plexiglass, paint) 5/3:6 Su85; Learning and earning: Jewelry Students Co-op, Kent State University, Kent, OH. 5/3:48 Su85 (4ils)
**MICHAELS, Thomas and Nora Hattman** Thomas Michaels Designers 5/1:10-13 W85 (4ils)
**MILLER, Ed** *5/1:10-13 W85 (3ils)
**MINOR, Barbara** exh rev 5/1:40-41 W85 (1il)
**MODERNIST jewelry** The search for modernist jewelry. Mark Isaacson. 5/3:40-41 Su85 (5ils); Structure and ornament: American modernist jewelry 1940-1960. Mark Foley. 5/3:36-9 Su85 (6ils)
**MOEHL, Karl** Peter Chamberlain: exhibition of unmetal: Hartmann Center Gallery, Bradley University, Peoria, IL. 5/2:40 Sp85 (2ils)
**MOORE, Kristin** *exh rev 5/3:50-51 Su85 (4ils)
**MORTON, Philip** 5/1:16 W85
**MOTY, Eleanor** exh rev 5/2:35 Sp85; exh rev 5/2:48 Sp85 (1il); Illus: Cameo brooch (silver, gold, copper, agate) 5/3:2 Su85
**MOUGHEMER, Linda** exh rev 5/4:46, 47 F85 (1il)
**MUELLER, Louis** exh rev 5/1:46 W85
**MUSEUMS—Canada** See: Toronto—Museums and galleries
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**NECKLACES** Art, artifact and the jewelry of Ramona Solberg. Cindy Cetlin. 5/3:14-17 Su85 (4ils, por)
**NEVELSON, Louise** exh rev 5/4:41 F85
**NILSSON, Staffen** Illus: Two rings (sterling silver). 5/1:29 W85
**NOFFKE, Gary** exh rev 5/2:48 Sp85
**NORTHERN Arizona University—Symposium** The great west metal show and symposium. Betsy Douglas. 5/3:46-7 Su85 (6ils)
**NORTON, Deborah** A history of the School for American Craftsmen. 5/1:14-21 W85 (17ils); David Paul Bacharach: weaving in metal. 5/1:6-9 W85 (3ils; cov il); Masterworks of contemporary American jewelry:sources and concepts Victoria & Albert Museum, London, England. 5/4:41 F85; Metals: Dawson Gallery, Rochester, NY. 5/2:42-3 Sp85 (4ils)
**NOVIN, Carolyn** Contemporary metals USA: Downey Museum of Art, Downey, CA. 5/4:42-3 F85 (7ils)
**OBITUARIES** Beetler, Vada Clark 5/2:6 Sp85 (por); Winkler, Nathan 5/3:4 Su85 (por)
**O'CONNOR, Harold** exh rev 5/2:35 Sp85; 5/2:20 Sp85
**OGDEN, Jack** Classical jewelry (symposium presentation). 5/3:53 Su85
**O'HANRAHAN, Brigid** exh rev 5/2:48 Sp85; Jamie Bennett:Helen Drutt Gallery, Philadelphia, PA. 5/4:43 F85 (1il)
**OKIM, Komelia Hongja** *exh rev 5/2:45 Sp85 (1il); Dalya Luttwak: portfolio exhibit: Aaron Faber Gallery, New York City. 5/4:48 F85 (2ils); Yeo-Ok Chang and Helene Safire: Plum Gallery, Kensington, MD. 5/2:45 Sp85 (3ils)
**ORTIZ, Jude** *exh rev 5/3:52 Su85 (2ils)
**OURBAN, Indoulis** Illus: Man and environment (enamel) 5/1:44 W85
**PACKING and shipping—Technique** *5/2:36-9 Sp85 (3diags)
**PALEY, Albert** *5/1:19-20 W85 (2ils); Illus: Brooch (14k gold, pearls) 5/3:cov il Su85
**PARDON, Earl** Illus: Reversible necklace (sterling silver and enamel); Pin (sterling silver and coral) 5/3:37, 39 Su85; Illus: Reversible pin (sterling silver, ivory, rosewood) 5/3:40 Su85
**PARKER, Fred** *exh rev 5/3:53 Su85
**PATINATION** David Paul Bacharach: weaving in metal. Deborah Norton. 5/1:6-9 W85 (3ils; cov il)
**PATTERNING** See: Fusion welding
**PATTERSON, Georgette** Illus: Earrings 5/3:48 Su85
**PEARSON, Ronald** *5/1:14-21 W85 (3ils, por)
**PELISSIER, Jaime** The jewelers craft by Jaime Pelissier (bk rev). Tim McCreight. 5/4:57 F85

**PENNSYLVANIA Society of Goldsmiths—Symposium** Image as metaphor: Beaver College, Glenside, PA). Dana Standish. 5/3:44 Su85 (3ils)
**PERRET, Etienne** Interview. 5/3:24-7 Su85 (2ils); The European watch, clock and jewelry exposition: Basel, Switzerland. 5/1:48 W85 (1il)
**PETERS, Jane** Illus: Number 5 (brooch, sterling silver, niobium, lapis lazuli) 5/3:45 Su85
**PHOTOTRANSFER** Chromatec: a new way of producing photographic images on refractory metals. Julie Horwitz and Anne McGregor. 5/2:52-3 Sp85 (1il; 2diags)
**PIJANOWSKI, Eugene and Hiroko** exh rev 5/1:47 W85
**PIMENTAL, David** exh rev 5/2:35 Sp85
**PINE, Alvin** A revisit with Allan Adler. 5/4:21 F85
**PLASTICS—Exhibitions** Plastic crafts: Brookfield Craft Center, Brookfield, CT. Akiko Busch. 5/4:46-7 F85 (6ils)
**PLUME, Vita** Pamela Ritchie:cancelled icons: The Upstairs Gallery, Mount Saint Vincent University, Halifax, N.S. Canada. 5/2:50 Sp85 (1il)
**POIRIER, Joanne** Martha Glenny: souvenirs-le souvenir: Anna Leonowens Gallery, Halifax, N.S. Joanne Poirier and Paul Leathers. 5/3:49 Su85 (1il)
**POLISANO, Vincent** Diana Vincent Company 5/4:26 F85 (4ils)
**POLSTER, Joanne** *Metalsmith* index to issues 4/1-4/4. 5/4:52-3 F85
**PRECIOUSNESS of objects as theme** Preciousness (review of "Precious objects: a national invitational exhibition of contemporary metalwork": Worcester Craft Center, Worcester, MA). Vincent Ferrini. 5/2:30-35 Sp85 (5ils)
**PRINCE, David** Jewelry and beyond: Mitchell Museum, Mount Vernon, IL. 5/1:40-41 W85 (7ils)
**PRIP, John** *5/1:14-21 W85 (4ils, por)
**PRODUCTION jewelers** Beyond the bench:part 3-Ed Miller, Patricia Daunis-Dunning, Dan Fleckstein and Keith Lewis (Ars), Thomas and Nora Hattman Michaels (Thomas Michaels Designers). Akiko Busch. 5/1:10-13 W85 (13ils); Beyond the bench:part 4-Diana Chrambanais and Vincent Polisano (Diana Vincent Company), Alice H. Klein (TKO), David LaPlantz/David D. Deco, Timothy Grannis. Akiko Busch. 5/4:26-9 F85 (13ils)
**PRODUCTION jewelry** The next step (interviews with Etienne Perret and Michael Good). Akiko Busch. 5/3:24-7 Su85 (5ils)
**PRODUCTION jewelery—Exhibitions** Metals invitational: New Harmony Gallery of Contemporary Art, New Harmony, IN. Teresa Callahan. 5/2:40 Sp85 (2ils)
**PROGRAM in Artisanry, Boston University** Letters to the editor: remarks on school closing. Robert Cardinale. 5/2:4, 54 Sp85. Reply 5/2:4 Sp85
**PYE, David** The nature and art of workmanship by David Pye (bk rev). Tim McCreight. 5/1:50-51 W85
**QUIGLEY, Robin** exh rev 5/1:47 W85; Illus: Triangular neckpiece 2 (silver, gold, synthetics) 5/3:6 Su85
**RADAKOVICH, Svetozar** exh rev 5/4:41 F85
**RAPOPORT, Debra** Illus: Necklace (papier-mâché, cord, glitter, plastic) 5/3:13 Su85
**REED, Vernon** *exh rev 5/1:39 W85 (1il)
**RENK, Merry** Illus: Pin (sterling silver and enamel; Pin (sterling silver) 5/3:38,40 Su85
**RENZIUS, Rudolph—Influence** (Harold Stacey). 5/2:13 Sp85
**RESNIKOFF, Florence** Carol Kumata, Beth Potter Rizo-Patron: Elaine Potter Gallery, San Francisco, CA. 5/2:41 Sp85 (2ils); Contemporary jewellery: the Americas, Australia, Europe and Japan: National Museum of Modern Art, Kyoto, Japan. 5/2:44 Sp85 (3ils)
**RETICULATION** Letters to the editor: reply to "Reticulation and heat coloration of shakudo and shibuichi" (4/4:38-41 F84). Diane Egbert. 5/1:4 W85
**REVERE, Alan** exh rev 5/2:35 Sp85
**REZAC, Susan** Necklace (silver, gold-plated brass, steel silver) 5/3:10 Su85
**RIBERO, Andre** *5/3:21 Su85 (1il)
**RICKHUSS, Sue** Illus: Stick pins (silk on titanium) 5/3:54 Su85
**RITCHIE, Pamela** *exh rev 5/2:50 Sp85 (1il); Illus: Belt for ex:Celebration '84 5/2: cov il Sp85; Illus: Fortification (shoulder brooch) 5/2:17 Sp85; 5/2:20 Sp85; An international gathering:the Society of North American Goldsmiths 1985 conference. 5/4:50-51 F85
**RITUAL vessels** Illus: Ecclesiastical chalices. 5/1:37 W85
**RIZO-PATRON, Beth Potter** *exh rev 5/2:41 Sp85 (1il)
**ROME—Museums and galleries** A metalsmith's guide to Rome. Susan R. Ewing. 5/1:33-7 W85 (12ils)
**ROSE engines** Engine turning 1680-1980:the tools and technique by Martin Mathews (bk rev). Kener Bond. 5/4:57 F85
**ROSENDAHL, Emma** Illus: Sculpture (copper). 5/1:29 W85
**ROSS, Lynda** exh rev 5/2:48 Sp85 (1il); exh rev 5/4:42-3 F85 (1il); Illus: Yes/no perfume bottle (silver) 5/2:48 Sp85
**RUHLIN, Tracy** exh rev 5/4:46, 47 F85 (1il)
**SAFETY equipment and materials** Fluoride-free fluxes, ventilation systems, safety glasses, soldering blocks. 5/3:56 Su85
**SAFIRE, Helene** *exh rev 5/2:45 Sp85 (2ils)
**SAMMECK, Heinz** *5/3:22 Su85 (3ils)
**SANDERS, Catherine** exh rev 5/4:42 F85
**SANDPAPER** See: Abrasives, Coated
**SANFORD, Claire** exh rev 5/4:42 F85
**SATTERFIELD, Barbara** Jan Yager: Swan Galleries, Philadelphia, PA. 5/1:42-3 W85 (2ils)
**SCHEUBLE, Sabine** *5/3:18-19 Su85 (3ils)
**SCHICK, Marjorie** Illus: Brooch (paper, thread) 5/4:18 F85
**SCHLEUP, Walter—Influence** (Canadian jewelers). 5/2:18 Sp85
**SCHOCKEN, Deganit** Illus: Brooch (silver, gold, nylon) 5/3:12 Su85
**SCHOMER, Britta** Elisabeth Kodré-Defner: Elaine Potter Gallery, San Francisco, CA. 5/4:50 F85 (1il)
**SCHOOL for American Craftsmen/R.I.T.—History** *5/1:14-21 W85 (17ils)
**SEDMAN, Vickie** Stanley Lechtzin, Vernon Reed: The Works Gallery, Philadelphia, PA. 5/1:39 W85 (3ils)
**SEPPÄ, Heikki** exh rev 5/2:34 Sp85; Illus: Memorial menorah (bronze). 5/1:49 W85; Opinion:objects in space: future arena for silversmiths. 5/1:49 W85 (3ils)
**SEXTONE, Richard** exh rev 5/4:45 F85
**SHAKUDO** Letters to the editor: reply to "Reticulation and heat coloration of shakudo and shibuichi" (4/4:38-41 F84). Diane Egbert. 5/1:4 W85
**SHIBUICHI** Letters to the editor: reply to "Reticulation and heat coloration of shakudo and shibuichi" (4/4:38-41 F84). Diane Egbert. 5/1:4 W85
**SHIRK, Helen** exh rev 5/1:46, 47 W85 (1il); *exh rev 5/2:43 Sp85 (2ils); exh rev 5/2:48 Sp85; *exh rev 5/4:46 F85 (1il)
**SHUKALO, Alice M.** Munya Avigail Upin: Willingheart Gallery, Austin, TX. 5/4:49 F85 (2ils)
**SILVERSMITHING** Opinion:objects in space: future arena for silversmiths. Heikki Seppä. 5/1:49 W85 (3ils)
**SILVERSMITHS, American** See: Adler, Allan
**SILVERSMITHS, Canadian** See: Stacey, Harold
**SKOOGFORS, Olaf** Illus: Dimsdale machine (brooch) 5/3:cov il Su85; Illus: Brooch (gold-plated, baroque pearl) 5/3:8 Su85
**SMITH, Christine** exh rev 5/3:47 Su85 (1il)
**SNAG—Conference** An international gathering: The Society of North American Goldsmiths 1985 conference. Pamela Ritchie. 5/4:50-51 F85
**SOLBERG, Ramona** *5/3:14-17 Su85 (4ils, por)
**SOLDERING blocks** Evaluation 5/3:56 Su85
**STACEY, Harold** *5/2:11-15 Sp85 (4ils, por)
**STACEY, ROBERT** Stacey sterling: master metalsmith: Harold Stacey. 5/2:11-15 Sp85 (4ils, por)
**STANDISH, Dana** Image as metaphor (symposium sponsored by the Pennsylvania Society of Goldsmiths): Beaver College, Glenside, PA. 5/3:44 Su85 (3ils)
**STANIONIS, Lin** exh rev 5/2:40 Sp85
**STANITZ, Mark** 5/1:20 W85
**STUDENT work** Learning and earning: Jewelry Students Co-op, Kent State University, Kent, OH. Bruce Metcalf. 5/3:48 Su85 (4ils)
**STUDENT work—Exhibitions** Passing out: John Holden Gallery, Manchester Polytechnic, Manchester, England. Peter Gainsbury. 4/5:54 Su85 (4ils).
**SYMPOSIA** See: Fashion Institute of Technology—Symposium; Northern Arizona University—Symposium; Pennsylvania Society of Goldsmiths—Symposium
**TAKEDA, Akihiko** Illus: Choker. 5/2:44 Sp85
**TAUSSIA, Anne** Illus: Wave (sterling silver). 5/1:49 W85
**TEXTILE techniques in metal** See: Weaving techniques in metal
**THIEWES, Rachelle** exh rev 5/2:48 Sp85
**THOMAS Michaels Designers (jewelry line)** Thomas and Nora Hattman Michaels 5/1:10-13 W85 (4ils)
**THOMPSON, Alan Burton** Illus: Fan brooch (sterling silver, acrylics) 5/4:47 F85
**THOMPSON, Noel** exh rev 5/4:42 F85
**THREADGILL, Linda** exh rev 5/2:36 Sp85; exh rev 5/2:46 Sp85
**THROWER, Christine** Illus: Amethyst sagittate (pin, sterling silver, gold, amethyst) 5/3:45 Su85
**TIMBERLAKE, Robert** exh rev 5/4:44 F85
**TISDALE, David** exh rev 5/2:40, 41 Sp85 (2ils); exh rev 5/1:47 W85; Illus: Neckpiece (anodized aluminum, sterling silver, diamonds) 5/3:10 Su85; Anodizing aluminum. 5/2:27-9 Sp85 (7ils, diags)
**TKO (jewelry line)** Alice Klein 5/4:26-9 F85 (3ils)
**TOM, Michael** exh rev 5/2:46 Sp85
**TORONTO—Museums and galleries** A metalsmith's guide to Toronto. Anne Barros. 5/2:8-10 Sp85 (6ils, map)
**TORTELL, Louis** Illus: Bracelet (stainless steel) 5/2:21 Sp85; Illus: Brooch 5/2: cov il Sp85; 5/2:20 Sp85
**TRADE shows** The European watch, clock and jewelry exposition: Basel, Switzerland. Etienne Perret. 5/1:48 W85 (1il)
**TUMBLE finishing** Technical briefs: fire stain on brass. Tim McCreight 5/3:56 Su85
**UPIN, Munya Avigail** *exh rev 5/4:49 F85 (2ils)
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**Van Ommen, Joke** *5/4:16-19 F85 (6ils, por); Metalwork '85:Plum Gallery, Kensington, MD. 5/3:45 Su85 (5ils)
**VENTILATION systems** 5/3:56 Su85
**VERSHBOW, Lisa** Illus: Bracelet (sterling silver, ebony inlay) 5/3:45 Su85
**The VO GALERIE** The VO Galerie:a European jewelry showcase in the American capital. Roger Kuhn. 5/4:16-19 F85 (6ils, por)
**WAGLE, Kate** Fusion patterns. 5/1:22-5 W85 (7ils, biblio); exh rev 5/2:48 Sp85
**WALKER, Stephen** *exh rev 5/3:46 Su85 (1il)
**WATKINS, David** Illus: Necklace (acrylic, silver) 5/3:13 Su85
**WATSON-ABBOTT, Linda** exh rev 5/2:35 Sp85; exh rev 5/2:46 Sp85
**WEAVING techniques in metal** David Paul Bacharach: weaving in metal. Deborah Norton. 5/1:4 W85 (3ils, cov il)
**WEBB, Aileen Osborn** *5/1:14-15 W85
**WEISS-EDWARDS, Linda** *exh rev 5/1:45 W85 (1il); Health hazards: questions & answers (fluoride-free fluxes, ventilation systems, evaluations of soldering blocs, safety glasses) 5/3:56 Su85
**WHYNOT, Pamela** Illus: The big bite (steel, sterling silver) 5/2:19 Sp85
**WIDIAPRADJA, Ignatius** *exh rev 5/4:48:9
**WIENER, Ed** Illus: Pin (sterling silver, garnet) 5/3:41 Su85
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**WILLIAMS, Robert** Illus: Good citizens ID pin 5/3:48 Su85
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**WOODING, Robert R.** Diamond setting:the professional approach by Robert R. Wooding (bk rev). Tim McCreight. 5/2:51 Sp85
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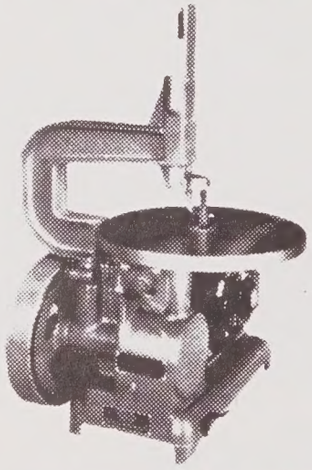

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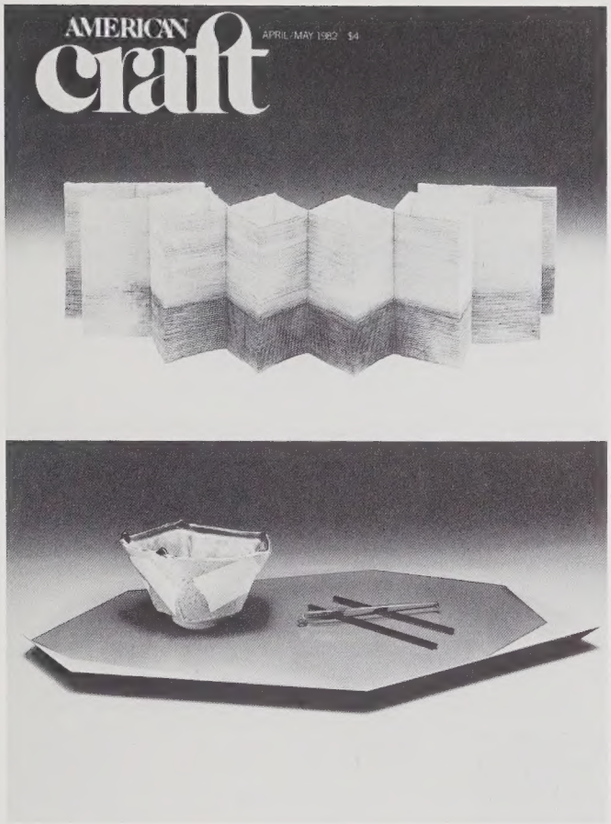


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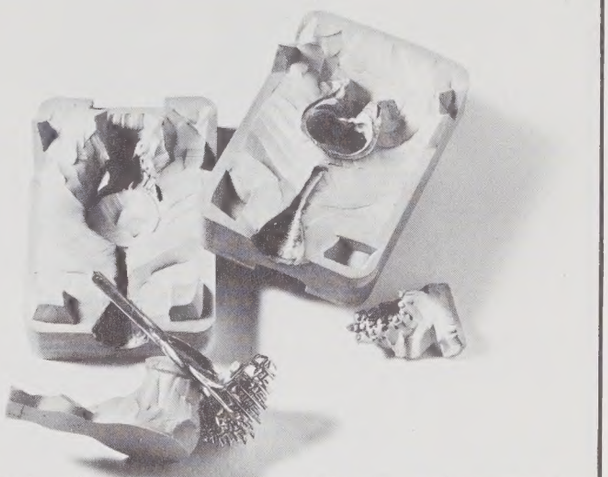

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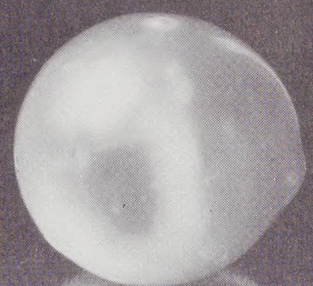

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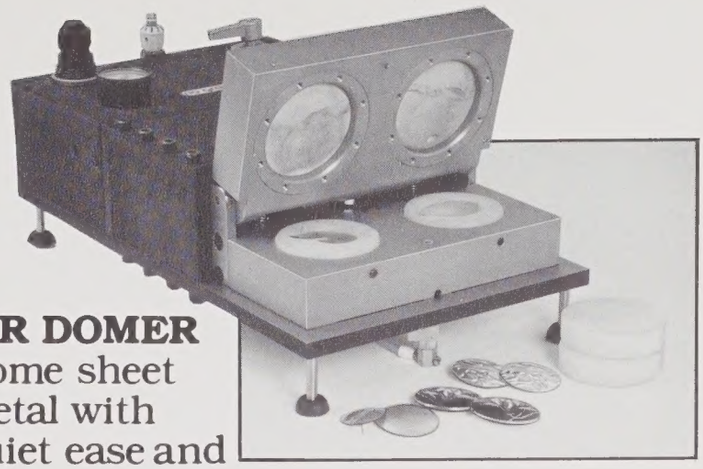
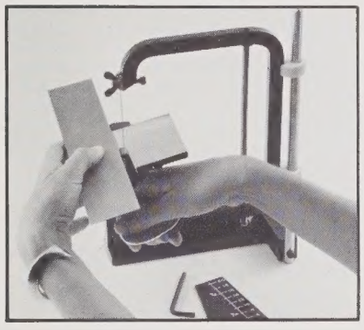
**Here are just a few of the new products that will be featured in Rio Grande's new tool catalog. Coming this December.**



**AIR DOMER**
Dome sheet metal with quiet ease and efficiency - *at production capacity!*

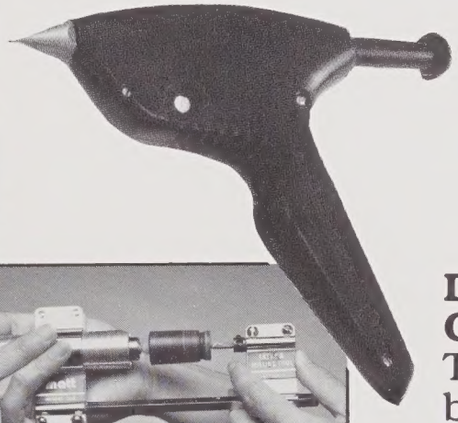
**RT BLANKING SYSTEM**

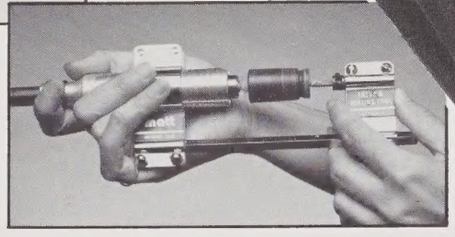


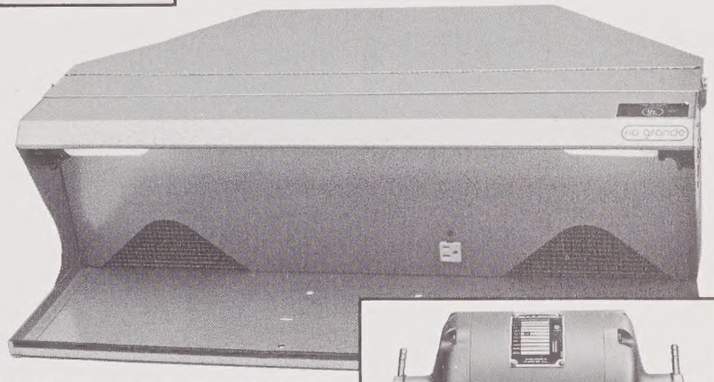
With this saw you can make dies that allow you to reproduce identical shapes out of sheet metal without sawing.

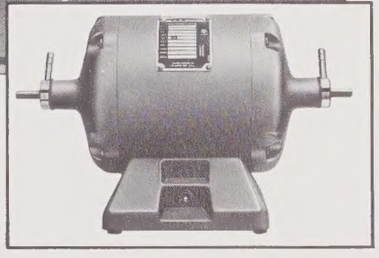
**RIO VIBE TUMBLERS**
For reliable performance, efficiency and compactness, these new vibratory tumblers can't be beat.

**MATT WAX TOOLS**
Here is a new design lathe, trimming tool and gun.







**DELUXE SIZE DUST COLLECTOR**
This new collector is bigger, and it will hold our Baldor motor.

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